

A design study exploring the use of Osage orthography stencils in the Osage language
classroom

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Jessica Rosemary Harjo

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Sauman Chu, Ph.D., *Advisor*

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Acknowledgements

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I want to address everyone as friends and relatives

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I want to say a few words

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I am addressing you all.

To be able to utilize my own typeface design for a language that is endangered, I attribute and acknowledge the education and opportunity that I've been given by the University of Minnesota. Thank you to my professors for allowing me to explore the topics in which interest me and keeping an open mind. I've learned so much from each of you. Many seeds were planted providing a foundation to my creativity.

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Dedication

I dedicate this work to the foundations of my life.

To my ancestors for being perseverant and withstanding through the years. It is through your resilience that I am here today and able to do this work.

To my Husband, who pushed me forward and never allowed me to give up. Thank you for your patience, love, and understanding.

To my E-lompa (son), my Astaaruukita. I began this work without you. Now you are the inspiration, and my reason to be.

To my Mom and Dad, who taught me to work hard for the things that I aspire to achieve and always support me in the many things I take on in life.

To my Siblings, for your support, love, and encouragement.

To all the language teachers, speakers, students, and advocates that are helping to revitalizing endangered languages. I am honored to work alongside you.

Abstract

Language loss is accelerating among Native American groups in the United States. This is predominantly due to the result of the assimilation process that occurred when Native Americans were forced to learn and speak only English in boarding schools (early 1900s), along with the current evolution of language shifts and too many first and second speakers dying. However, there is also a lack of teaching resources that tribal language departments can access—especially languages with unique orthographies like the tribal language of the Osage Nation of Oklahoma, the endangered language of focus in this study. This can negatively impact the retention of language students, the ways students learn, and the abilities teachers must have to teach a language. This research takes a qualitative approach through a design lens to explore the need for teaching resources in the Osage Nation language department. Through observation and interviews, a focus was centered on the use of stencils in the Osage Nation language classroom. Dual code theory and visuo-haptics were used with Jean Piaget’s Stage Theory and Vygotsky’s Sociocultural Theory as a theoretical foundation to support the use of the Osage orthography stencils as learning aids. The results discover the role stencils have in enhancing the language learning experience as a visual resource, addresses the power that orthographies have in terms of identity, self-esteem, confidence, and empowerment, and provides recommendations for the use of Osage orthography stencils and new teaching resources.

TABLE OF CONTENTS

Acknowledgements	i
Dedication	ii
Abstract	iii
Table of Contents	iv
List of Figures	ix
I. Introduction	1
a. Background and Context	2
i. The Development of the Osage Language	5
ii. Preliminary Research with the Osage Nation	10
Language Department	
b. Problem Statement	12
c. Statement of Purpose and Research Questions	13
d. Research Method	14
e. Rationale and Significance	15
f. Researcher Assumptions	16
g. Role of Researcher	17
h. Limitations of the Study	17
i. Definitions of Key Terminology	19
II. Literature Review	20
a. Relationships between Design, Language, and Culture	21
i. Identity	23
ii. Language and Identity	25

iii. Developments of Unique Writing Systems	26
iv. Letterforms and Identity	30
b. Approaches to Letter Learning	34
i. Learning Tools	35
ii. Learning Theories	38
iii. Dual Code Theory and Visuo-haptics	39
c. Conceptual Framework	40
III. Methodology	43
a. Rationale for Qualitative Research Design	44
b. Rationale for Research Methods	45
c. Study Population	46
d. Research Setting	47
e. Overview of Research Design	47
f. Literature Review	49
g. IRB Approval	49
h. Methods of Data Collection	49
i. Informal Pilot Study	50
1. Initial Stencil Design	50
2. Informal Pilot Results	53
3. Follow-up Meeting	54
4. New Stencil Designs	55
ii. Observations	56
1. Participants and Dissemination	56

iii. Interviews	58
i. Analysis and Synthesis of Data	59
i. Observations	59
ii. Interviews	59
iii. Organizing Themes	60
j. Ethical Considerations	62
IV. Findings	63
a. Photo Observations	63
b. Themes	77
i. Theme 1: All Teachers Expressed the Value of Innovative Experiences to Effectively Teach the Osage Language and Letterforms	77
ii. Theme 2: All Teachers Expressed that Teaching the Orthography to Early Learning Ages is Different from Teaching Adults	81
iii. Theme 3: The Use of the Stencils Provides a Boost in Self-esteem and Confidence	82
iv. Theme 4: The Majority of Teachers Indicated the Use of Sight Words in the Osage Orthography as Beneficial	85
v. Theme 5: Time and Resources are Challenges to Teaching the Osage Language	86
c. Stencil Feedback	89

i.	General Feedback on the Size and Use of the Stencils	89
ii.	Stencil Likes	90
iii.	Stencil Design Improvement	92
iv.	Suggestions for New Tools	93
v.	Suggestions for Use (Intermittent and Ages)	95
vi.	The Main Language Tools They Use	95
vii.	New Resource Ideas	96
d.	Conclusions	98
V.	Analysis, Interpretation, and Synthesis of Findings	100
a.	Analytic Categories	101
i.	Analytic Category 1: Leveraging the Use of Osage Orthography in the Classroom.	103
1.	Sight Words	103
2.	Identity	104
ii.	Analytic Category 2: Recognizing that Not All Osage Language Learners are the Same	105
iii.	Analytic Category 3: Reinforcing Joy, Confidence, and Infusing Creativity in the Classroom	108
iv.	Designed Resources for the Osage Language Classroom	111
VI.	Conclusions and Recommendations	113
a.	The Osage Orthography as a Visual Resource	114
b.	Osage Language Learners have Different Needs that	115

Call for a Variety of Stencils and Learning Aids	
i. Design Matters	116
ii. Make Learning Fun	117
c. Recommendations	117
i. Recommendations for New Stencils	117
ii. Recommendations for Use of Stencils	119
iii. Three Recommendations for Further Learning Aids for Learning the Letterforms	119
iv. Three Recommendations for Further Learning Aids for Learning Beyond the Letterforms	120
d. Further Recommendations	120
e. Further Research	120
f. Researcher Reflections	121
Bibliography	123
Appendices	126
Appendix A: Follow-up Questions for Pilot Study	126
Appendix B: Letters and Informed Consent Forms	127
Appendix C: Consent Form for Interviews	136
Appendix D: Semi-Structured Interview Questions	137

List of Figures

Figure 1. The Osage Orthography	6
Figure 2. Inspiration for the Osage typeface design	8
Figure 3. The final Osage typeface design by Jessica Harjo	8
Figure 4. Immersion Mural in Pawhuska, Oklahoma painted by mother and daughter Wendy Ponca and Alexandra Ponca Stock	9
Figure 5. Individual stencil set designed for informal pilot study	11
Figure 6. Cherokee Syllabary	28
Figure 7. Western Cree Syllabics	29
Figure 8. Lushootseed School Typeface	29
Figure 9. Language Event Flyer	30
Figure 10. Examples of Visual Design	31
Figure 11. Osage Language Mural in Pawhuska, Oklahoma	32
Figure 12. Children with Pride in Language Learning	33
Figure 13. Cherokee blocks	36
Figure 14. Cherokee language flashcards and workbook	36
Figure 15. Lushootseed wood type and children	37
Figure 16. An Indigenous research conceptual framework based on Nehiyah-centered methodology	41
Figure 17. Conceptual framework	43
Figure 18. Individual stencil set designed for informal pilot study	51
Figure 19. Osage language teacher creating classroom materials with the stencils in August 2015	52

Figure 20. Osage language students using stencils to make flashcards in 2016	52
Figure 21. Osage language students using stencils to create posters for a language fair poster competition in 2017	53
Figure 22. Classroom materials: fruit, colors, and numbers	54
Figure 23. New full stencil design that includes all possible diacritics and spacing for placement in materials	55
Figure 24. A streamlined codes-to-theory model for qualitative inquiry	62
Figure 25. Student Group A Stencil Activity	65
Figure 26. Student Group B Stencil Activity	66
Figure 27. Student Group C Stencil Activity	67
Figure 28. Student Group D Stencil Activity	68
Figure 29. Student Group E Stencil Activity Photo 1	70
Figure 30. Student Group E Stencil Activity Photo 2	70
Figure 31. Student Group F Stencil Activity	71
Figure 32. Student Group G Stencil Activity	72
Figure 33. Student Group H (Student Teachers) Stencil Use Photo 1	73
Figure 34. Student Group H (Student Teachers) Stencil Use Photo 2	74
Figure 35. Student Group H (Student Teachers) Stencil Use Photo 3	74
Figure 36. Student Group H (Student Teachers) Stencil Use Photo 4	75
Figure 37. Student Group H (Student Teachers) Stencil Use Photo 5	75
Figure 38. Student Group H (Student Teachers) Stencil Use Photo 6	76
Figure 39. Student Group H (Student Teachers) Stencil Use Photo 7	76
Figure 40. Student Group H (Student Teachers) Stencil Use Photo 8	76

Figure 41. Tree (Zha^)^ Example.	83
Figure 42. Orthography as shapes/art	84
Figure 43. Stencil use example on glass door window to the classroom	111
Figure 44. Full stencil with thinner line for quick writing	118
Figure 45. New stencils in grouped letterforms based on use	118

Introduction

In the Osage Nation of Oklahoma, Osage language teachers are increasingly engaged in the teaching of the Osage letterforms but there is no research into students' experiences in this effort. As the new Osage orthography was developed in 2006, designed resources have been limited due to the unique letterforms. Over the past decade, the Osage Nation has slowly implemented Osage language into the local schools and in recent years, has developed their own Osage immersion school and language nests. These are the key classroom spaces where this study takes place.

This study explores the use of Osage orthography stencils in the beginning level Osage language classrooms. The purpose of this study was to understand the specific needs and ideal sizes for the different uses of the Osage orthography stencils within the beginning level Osage language classrooms and to further design and develop these tools to allow for the best learning advantages and outcomes. The goal was to provide the Osage orthography stencils to the teachers at the Osage Nation language department and to learn about the relationship between learning/teaching a unique orthography and how designed materials such as the Osage orthography stencils could make a difference.

A better understanding of these interactions and acquired knowledge allows teachers and designers to develop prospective learning aids, tools, and teaching resources that contribute to the revitalization of the Osage language and provide examples to other Native American languages. The results seek to fill the gap of knowledge, the need and purpose for hands-on language tools, to be a voice in conversations about oral language learning being the only avenue of effective learning, and to improve on the usability of learning and teaching aids. This research also briefly examines the relationship between

the Osage orthography and cultural identity, a connection that can support the critical need for language survival and further support the need for learning and visual aids in Osage language classrooms.

This research employs a qualitative methodology to explain the relationship under examination. Participants of this study include Osage language teachers and students in the beginning level Osage Nation language classrooms. This chapter begins with an overview of the background and context that frames the study. Following is the problem statement, the statement of purpose, the research questions, the research method, and the rationale and significance of this study. The chapter concludes with the researcher assumptions, the role of the researcher, limitations of the study, and definitions of the key terminology used.

Background and Context

Throughout North America there are several Native American languages that are on the verge of extinction. Since these languages were only spoken versus written in the past, many of the languages are suffering today. This is predominantly due to the result of the assimilation process that occurred when Native Americans were forced to learn and speak only English in boarding schools (early 1900s), along with the current dominance in North America of non-Native American languages, the evolution of language shifts, and the lack of resources accessible to tribal language departments.

In the United States alone, there are over 560 federally recognized tribes, many of which have already lost their languages. According to The Leadership Conference (2017), “when Europeans first arrived in what is now the United States, more than 300 different languages were spoken. Today, only 175 remain, but many are only spoken by a

small number of elderly people, and are in danger of disappearing” (p.1). A trend that is becoming is evident is that the *first speakers* of any tribal language are only prominent in the older generations and the most devastating realization is that too many of these first speakers are dying before enough *second* speakers are taught, and those second speakers that are taught are not becoming fluent enough to carry on the full capacity of what a language contains.

The dominant language in the United States is the English language, which results in a language shift for smaller language groups. Many tribal languages are experiencing this language shift, and others, language maintenance. As defined by Hornberger (2010):

Language shift refers to “the gradual displacement of one language by another in the lives of the community members” manifested as loss in number of speakers, level of proficiency, or range of functional use of the language. The contrasting term has traditionally been language maintenance, which “denotes the continuing use of a language in the face of competition from a regionally and socially more powerful or numerically stronger language”. [sic] [Abstract]

Language shift is a dominant reason for the acceleration of language loss among Native American groups in the United States. According to the Alliance for Linguistic Diversity (2017) “experts estimate that only 50% of the languages that are alive today will be spoken by the year 2100.” Native American languages are becoming the second language learned (if at all) in households. Additionally, most tribal languages are only spoken in areas of traditional dances, ceremonies, songs, and prayers and not in everyday conversation and activities with children—but expanding these avenues of language use

is the current goal and focus of many language and immersion programs. When a language becomes endangered, the culture of the people who belong to that language also becomes endangered. Most concerning is “when a language becomes extinct, it can take along with it much of the history and culture of the people who spoke it” (The Leadership Conference, 2017). Therefore, language is an essential part of who we are as people. It is part of our identity. Without language, traditions are conformed, culture is lost, and histories diminish—Native American language loss erases worldviews, ideologies, and identity.

Looking at other causes of language extinction and endangerment, I found that there is a lack of resources accessible to tribal language departments. Resources include accessible resources and teaching resources. Accessible resources can include location-based resources such as a lack of reliable internet or internet access in the rural areas where most tribes are located. This also includes spaces and locations to hold language classes, accessibility to modern technology, internet, and outreach methods. For students, transportation is a common barrier that limits travel to attend language class. For teachers, access to resources extend to training and experience, as some teachers are not systematically trained to be teachers. These language teachers start as language teachers simply because they know the language. They do get the level of certification needed to teach, but because access is limited it just takes more time.

Teaching resources include more tangible items such as learning aids, tools, and equipment that can be used within the classroom. Learning aids can be defined as “books, notes, charts, computers, recordings, diagrams or any equipment, tools, and devices that aids in the learning and development process. Learning aids enhance one's learning

abilities and help to increase one's learning potential” (What Is a Learning Aid, 2020, para. 1). Other teaching resources may include different hands-on tools such as games, videos, stencils, magnets, and toys. Also, due to the current digital era that our society is advancing through, students are becoming more attuned to wanting to learn through tablets and technology-based learning tools. These types of electronic resources are extremely limited. Visual and print materials such as workbooks, charts, posters, and other classroom materials are often created by teachers themselves.

These types of teaching resources become even more limited when a language is not using English characters to write their language. Languages that use a specific and unique orthography such as the Osage language of Oklahoma has had to overcome many obstacles such as getting their written orthography into Unicode to be able to use the language on the computer, with an established Osage font/keyboard, to create and print language and educational resources.

The Development of the Osage Language

The tribal language of the Osage Nation of Oklahoma—the language of interest in this study—is among the endangered languages in the language database. The Osage language, *wazhazhe ie*, is classified as a “critically endangered language” (Alliance for Linguistic Diversity, 2017) with fewer than 10 *second-speakers* left. Revitalization efforts began in 2003 when the Osage Language Program was established.

After a period of written Osage language depictions using the English alphabet, the Osage language program moved to create a unique orthography in 2006, as shown in Figure 1, to depict the crucial phonetics the language holds and to blend the sounds that couldn't be made using the English alphabet. An orthography can be defined as a writing

system or set of symbols that represent specific sounds. The symbols in the Osage orthography specifically have only one sound for each symbol. There are thirty-two symbols to represent what was identified as thirty-two distinct sounds that the Osage language holds. The creation of this sound-based orthography was intended to stream-line teaching practices.

Vowels								
Λ	α	∩	○	U	Λ^	∩^	○^	
a	e	i/iu	o	u/iu	an/a	in/i	on/q	
[a]	[e~ε]	[i]	[o]	[u]	[ā]	[ī]	[ō]	
Diphthongs								
Λ	○	α	I					
[aī]	[oī]	[εī]	[ai]					
Consonants								
R	h	h	k/g	k'	kk/k/hk	l	m	n
br/bth/bl	ch/č/ts	h	k/g	k'	kk/k/hk	l	m	n
[bɪ]	[tʃ]	[h]	[k]	[k']	[ʰk~k:]	[l]	[m]	[n]
p	p'	pp/p/hp	s	sh/š	sk/çk/sg	st/çd/sg	t/d	tt/t/ht
p/b	p'	pp/p/hp	s	sh/š	sk/çk/sg	st/çd/sg	t/d	tt/t/ht
[p]	[p']	[ʰp~p:]	[s]	[ʃ]	[sk]	[st]	[t]	[ʰt~t:]
ts/c/ds	ts'/c'/ds	th/ð	w	x/h/ɣ	z/ç	zh/ž/j	'	
[ts]	[ts']	[ð]	[w]	[x~ɣ]	[z]	[ʒ]	[ʔ]	

Figure 1. The Osage orthography. Retrieved April 2, 2017, from <http://www.omniglot.com/writing/osage.php>

In early 2014, in a three-day working seminar, the Osage orthography was revised to address linguistic issues, graphic design, fonts, and character encodings, and in late 2014 it was submitted and officially accepted into the Unicode Consortium—a successful feat that allows recognition of the orthography in computer operating systems.

The Osage Nation language program has been in constant development over recent years. Constant development is crucial in order to keep language curriculums evolving. Learning to adapt to the learning styles of the newer generations of language learners is also vital. More than often these needs require further expertise and resources from outside of the tribe. Therefore, as a graphic designer and researcher, I began to look for ways that I could assist the Osage Nation language program. I asked myself, what assistance could I provide (as a graphic designer and researcher who is knowledgeable of the Osage language) for new resource development or other needs?

As many oral languages are transforming into written visual languages, it is possible that now, during the developing society of advanced technology, visual designers and artists can turn to their skillsets and tactile creativity to assist in the advancement of language learning. The following are three projects that have begun to build a base for this effort.

First, an initial design research project that I completed in 2013 was redesigning the original Osage orthography to be more functional and consistent with technology, and to visually and symbolically represent the Osage arts, dance, and culture within each of the letterforms.

The objective of this project was to design a new typeface that represented a deeper conceptual meaning to its form. Therefore, each letterform was designed to have a direct relationship to the Osage arts whether it be the movements and fluidity of traditional Osage dancers, the ornate embellishments seen throughout traditional Osage regalia, or a symbolic representation of the *wazhazhe* way of life. Figure 2 shows an inspiration of the typeface design which was a visual representation of the basic

movements and forms of traditional Osage dancers. The new typeface was designed to be special in the relationship to the identity of the language learners and the outcome was held to be successful through a visual representation of traditional design. Figure 3 shows the final typeface design.

Second, with the first Osage Nation language immersion classes beginning in 2016 serving Osage children ranging in age from PreK through 3rd grade, two Osage Artists, Wendy Ponca and Alexandra Ponca Stock, completed an Osage language mural



Figure 2. Inspiration for the Osage typeface design. (Dance) Photo Source: Osage News.

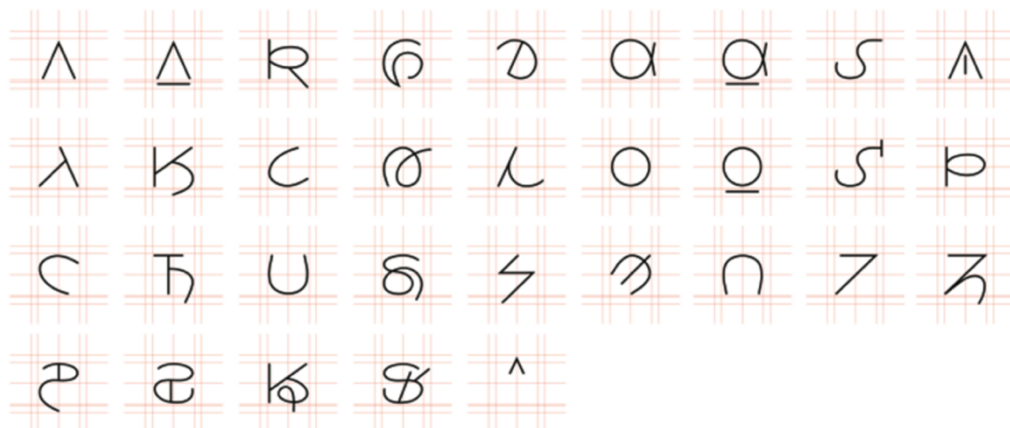


Figure 3. The final Osage typeface design by Jessica Harjo.

project by working to paint the first Osage language immersion students in a series of murals to preserve this time in history (Figure 4). This work provided a historical approach to the new Osage language immersion program's initiatives. "A series of five Murals will feature the faces of current students at each school. Ponca said the Murals will capture a significant point in Osage history by showcasing the faces of the students who are a part of the process to revitalize and protect the Osage Language" (Osage Nation News, 1). This project provides a visual historical marker to the Osage Nation immersion school, providing motivation to all types of Osage language learners.



Figure 4. Immersion Mural in Pawhuska, Oklahoma painted by mother and daughter Wendy Ponca and Alexandra Ponca Stock. Photo by Tara Madden, Osage News. Retrieved from Flickr.com June 28, 2017.

Third, following the endeavor of getting the Osage orthography into Unicode, the Osage Nation worked to release their first language mobile application titled "Wazhazhe" in November 2017. This mobile application is now being used in the community and in

the Osage language classrooms. The application can now be downloaded on Apple and Android platforms and contains over 500 audio entries recorded by Native speakers which allows access to the sounds of the Orthography and beginning level Osage words. The recommended age for this application is ages 4+ and includes three types of quizzes and three levels of games. There is also a second language mobile application that is titled “Sonny Goes to School” released in 2019. This mobile application involves more advanced structures like sentences. The recommended age for this application is ages 4+ and includes grammar lessons and quizzes.

Preliminary Research with the Osage Nation Language Department

In furtherance of this exploration, I conducted a preliminary research study. In this study I explored how I, as a graphic designer, could assist with the design and development of a teaching resource to help advance language learning in the beginning level Osage Nation language classrooms. I chose to work with the Osage Nation language department because of their ongoing commitment to better their language department and willingness to evolve their program. This preliminary research became the informal pilot study for this overall research.

The informal pilot study took place in the Spring of 2015 and was intended to gauge the interest and potential need for teaching resources at the Osage Nation language department in Fairfax, Oklahoma. To get started with this project, I met with an Osage language teacher who worked within the Osage Nation language department about the need for new teaching resources within the beginning level Osage language classroom that served students aged 5-12 years. I found out that there was a specific need for tools to help with learning the Osage orthography. It was expressed that one of the first

learning projects was to have students make their own orthography flash cards. At that time, students were cutting out pre-printed orthography letters and gluing onto construction paper, so we talked about creating a tool that students would be able to use to assist them in writing and creating their own orthography letterforms. We also discussed creating a tool that the teachers could also use to create classroom materials. Therefore, it was determined that a single set of individual stencils for each letterform and accent marks (Figure 5) of the Osage orthography would be a great first tool to have in the classroom. This tool was chosen because it was predicted to help facilitate learning the letterforms (students) and displaying them (teachers) through writing without worrying about writing them perfectly. The teacher said that “we [teachers] usually just print the letters out so that we don’t mess them up writing them freehand, but stencils will help us be more creative. There is only so much we can do with printed letters.”

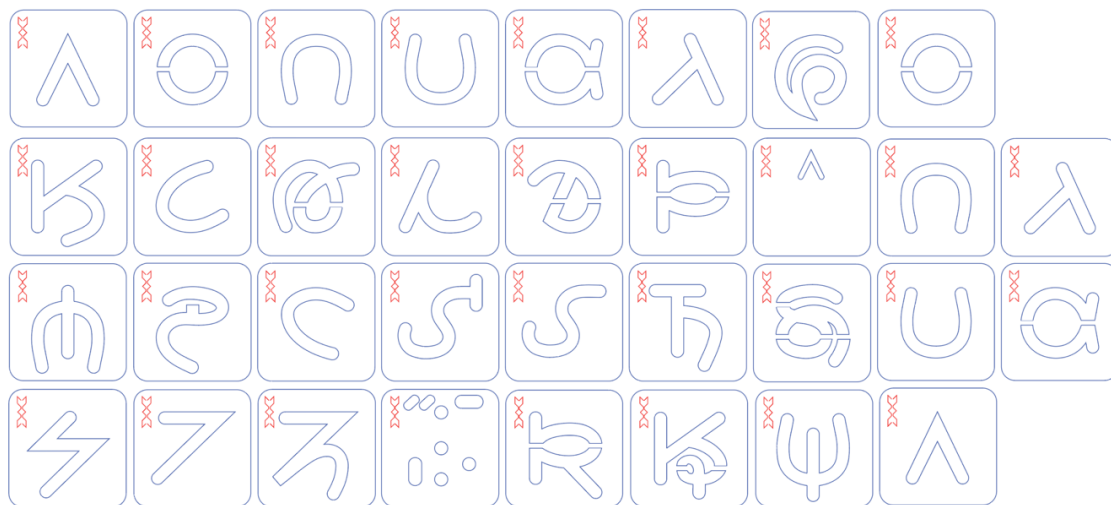


Figure 5. Individual stencil set designed for informal pilot study.

The set of individual orthography stencils were each designed to be all one size. Each letterform creates a 2-inch letter, with a 2-inch cap-height (the cap-height refers to the height of a capital letter above the baseline for a typeface, in this case since the Osage

orthography does not have established lowercase and uppercase letters, the cap-height is used to describe the height) and laser cut on a variety of materials before deciding on the polyethylene terephthalate (PET) material as the best for use in the classroom setting.

This material was determined to be best because of its flexibility and thin nature.

Rounded corners were placed on each stencil for safety reasons and ease of use. Identity place markers were etched into the upper left corner of each stencil as a wayfinding cue for the correct orientation of each symbol. The design took into consideration the spacing of the bridges and islands of the stencil for optimal usability and legibility of the letterform's design. The individual set of stencils was given to the Osage language department in Fairfax, Oklahoma.

In January 2017 – in a follow-up discussion with the Osage language teacher at the Osage language department in Fairfax, Oklahoma– positive feedback for the individual stencil set and the desire to develop additional stencil sets for similar uses in the classroom was gathered. Specifically, after using the first set of individual stencils, smaller sets were desired because there were longer Osage words that they wanted to include on posters and projects where the larger stencils would inhibit them to write these words on one line. Additionally, other language departments outside of the Fairfax Osage language department expressed the want to have sets of stencils for their own classrooms.

To understand the specific needs and ideal sizes for the different uses within the classroom became part of the research process that this study presents. This informal pilot study and the proposal to add different sizes of Osage orthography stencils are used to justify the continuation and the subsequent research approaches for this study.

Problem Statement

There is little to no research about designing teaching resources for language students and teachers of (endangered) Native American languages. Additionally, tribal languages that have a unique orthography or writing system, such as the Osage Nation of Oklahoma, are at a disadvantage as designed resources have been limited due to the unique letterforms.

For the Osage language, there is no research involving the design and development of teaching resources to help advance language learning in the beginning level Osage Nation language classrooms. Additionally, as Osage language teachers increasingly engage in the teaching of the Osage orthography, there is a need for more teaching resources to be developed and there is no research on the student and teacher experiences of this type of work. This problem can negatively impact the retention of language students, the way students learn, and the capacities teachers must have to teach—all factors that can lead to language extinction.

Statement of Purpose and Research Questions

The purpose of this study was to understand the specific needs and ideal sizes for the different uses of the Osage orthography stencils within the beginning level Osage language classrooms and to further design and develop these tools to allow for the best learning advantages and outcomes. The goal was to provide the Osage orthography stencils to the teachers at the Osage Nation language department and to learn about the relationship between learning/teaching a unique orthography and how designed materials such as the Osage orthography stencils could make a difference.

The primary objective of this study was to observe the use of the Osage orthography stencils in the beginning level Osage Nation language classrooms.

Secondary objectives include (a) to learn how the letterforms of the Osage orthography are used, learned, and taught in the overall learning process and (b) to gather the Osage language teachers' input and feedback on the stencils, the different sizes of stencils, and ideas for future teaching resources.

Specific aims include (a) to improve the usability of the Osage orthography stencils, (b) to learn how the Osage orthography may affect the experience of learning Osage, and (c) to generate new recommendations for language learning and teaching aids.

To address the research problem, the following research questions are addressed:

1. What is the role of the Osage orthography in the experience of learning Osage?
2. How do students interact with and learn the shapes of the Osage letterforms?
Do the Osage orthography stencils provide help?
3. What effect does the use of the Osage orthography stencils have on the experience of learning Osage?
4. What designed resources or teaching aids do teachers need to further enhance Osage student learning?

Research Method

In the informal pilot study, individual stencils for each letterform of the Osage orthography were designed and disseminated to the Osage language department in Fairfax, Oklahoma. This was a preliminary step in gauging interest in the provision, development, and design of teaching resources to contribute to the Osage Nation language classroom.

Research proceeded with a follow-up questionnaire sent to the Osage language teacher involved in the informal pilot study. This questionnaire provided information to subsequent design and new stencil sets for use in this study.

With the approval of the University of Minnesota's institutional review board, qualitative methodology was then used to carry out naturalistic observations of the Osage language students and teachers interacting with and using the stencils in the Osage language classrooms, learning the letterforms of the Osage orthography, as well as to gather the Osage language teachers' thoughts and ideas through semi-structured interviews. The observations and interviews involved all consenting Osage language teachers and students as participants.

Interviews were recorded and held in a public setting convenient to participants and allowing for private conversation. Following observations and interviews, data was transcribed verbatim, analyzed, and coded to themes.

Rationale and Significance

Language loss is accelerating among Native American groups in the United States. Without language, traditions are conformed, culture is lost, and histories diminish—Native American language loss erases worldviews, ideologies, and identity. Despite studies and successes of language documentation strategies and linguistic approaches to preserving languages—Native American languages are still becoming endangered or extinct. One reason for this problem is the lack of resources, training, and experience that tribal nations and language departments/programs can access. Resources include accessible resources such as training and experience, but also teaching resources such as learning aids that can be used within the classroom.

The significance of this study is to provide new knowledge about language learning and teaching resources for unique orthographies, contributing to literature, professional knowledge, and practice in studies within Native American language revitalization, documentation strategies and language survival. The research will fill the gap in current literature by providing examples and ideas of ways students learn Native American orthographies with the help of stencils as learning aids. By learning about these relationships, designed resources and tools can be improved and developed based on the insight that is gained. Furthermore, results may be applicable to other language programs in the creation of their own learning aids as an approach to help language learning.

Researcher Assumptions

Based on my experience and background as a researcher and involvement with the Osage Nation language department, three primary assumptions were made regarding this study. First, students should be familiar with the letterforms of the Osage orthography and be able to use the stencils to aid in learning the letterforms, and through this process a direct observation of classroom activities will be available. This assumption is based on the fact that the Osage orthography has been used in the language department since its creation in 2006 and the implementation of the Osage Nation immersion program in 2016. Second, Osage teachers are strongly motivated to provide information and ideas that could improve the overall learning process of learning Osage. This assumption is based on the experiences that I have had with the department, their commitment to the students, and willingness to be involved thus far. Third, there is a need to come up with solutions that help students learn endangered languages, this starts with creating more teaching materials. This assumption is based on the belief that as oral

languages are diminishing in speakers, documentation is a key to survival, and expanding to outside disciplines to provide additional skills and expertise to develop teaching materials becomes vital.

Role of the Researcher

At the time of conducting this study, I moved to Oklahoma to be a part of the community involved. I have an established connection to the Osage Nation language program and have taken a previous beginning Osage language class. Thus, I have experience as a language student in the Osage Nation language program. I acknowledge that my experience is valuable in providing insight to the design and creation of new teaching resources but can also serve as liability, biasing my judgment regarding research design and interpretation of findings. In addition to my assumptions, I remain committed to engage in an ongoing self-reflection and know that as a qualitative researcher, it is important to let the data determine the results, and I have the responsibility to interpret the participants' ideas and perspectives of learning processes accurately and impartially.

Limitations of the Study

This study contains certain limiting conditions, some of which are related to the common critiques of qualitative research methodology in general and some of which are inherent in the study's research design.

First, the interpretation of the data is limited to only this specific study and cannot be generalized to the wider population unless further studies are conducted, and saturation can be met. However, given the context and background of the study, it is anticipated that the knowledge gained through this study could be assessed for its applicability and applied appropriately in similar contexts.

Second, I worked to know my own biases and not let them influence the outcome. Although, I strongly believe that designing tangible language learning tools is one of the keys to revitalizing languages, I understand that not everyone feels this way and there is a possibility that it is not important to the survival of a language. Throughout this research process I diligently attempted to keep these biases at bay so as not to interpret participant's words to reflect any personal beliefs. During data analysis, I intentionally focused the analysis on the transcribed narratives provided by the participants' interviews. Regarding ideas and perspectives, I expressed what was said during these narratives regarding discovered outcomes by using the participant's own words. To reduce the limitation of potential bias during data analysis, I removed all participant names and coded all interview transcripts blindly as to not associate any material or data with any particular individual. I worked to be objective and impartial when recording and presenting the findings.

Third, the community in which I observed is a community where I have lived, so it may be overly familiar at times. Therefore, it is important that I did not overlook what is taken for granted and was careful when recording observations in field notes so that the data collection included minute details of behavior. The same consideration was taken for the interview process.

Lastly, as I am American Indian, my perception of the data may differ than that of a non-American Indian researcher. It was also predicted that the participants may relate to me and have more difficulty adjusting to me taking on the role of the interviewer, a phenomenon referred to by Maxwell (2005) as *participant reactivity*. On the other hand, this may have allowed more trust and allowed for more in-depth responses to the

interview questions, bypassing basic and mutual understandings of the basic principles of culture. This also coincides with the idea behind the indigenous conceptual framework that is presented in the Chapter III: Methodology.

Definitions of Key Terminology

Teacher—someone who teaches the Osage language in the tribal community

Student—a student in the tribal community learning the Osage language

Letterforms—the symbols of the Osage orthography

First speakers—a person who learned the language as their first language

Second speaker—a person who learned the language as their second language

Wazhazhe ie—meaning “Osage language” in the Osage language

Wazhazhe—meaning “Osage” in the Osage language, often used in a more cultural context such as “the wazhazhe way of life”

Literature Review

The purpose of this study was to understand the specific needs and ideal sizes for the different uses of the Osage orthography stencils within the beginning level Osage language classrooms and to further design and develop these tools to allow for the best learning advantages and outcomes. The goal was to provide the Osage orthography stencils to the teachers at the Osage Nation language department and to learn about the relationship between learning/teaching a unique orthography and how designed materials such as the Osage orthography stencils could make a difference.

To carry out this study, it was necessary to explore the literature related to these ideas. Beyond this exploration, I expect this review will be ongoing throughout the data analysis, interpretation, and synthesis phases of this study.

Throughout my research about the process of American Indian language planning, revitalization, and maintenance, I've found that most resources about writing systems take a systematic approach and view language through a linguistic lens, while a plethora of resources talk about the importance of oral teachings in forms of language nests and immersion schools being vital and successful. Additionally, there are numerous languages that use the English and Roman characters for their writing systems. For example, Reyhner and Lockard, ed. (2009), combine topics about immersion, linguistics, and developments within the larger language groups in the Maori, Hawaiian and Alaskan revitalization efforts. In contrast to the Osage language, all three of these language groups consist of languages that use English and Roman characters in their writing systems as opposed to a unique orthography.

Linguistics and writing systems that use the English and Roman characters are great pillars of knowledge, but in this chapter I will be focusing on Native American languages that use unique orthographies and the interconnectedness orthographies have to visual design, language, and culture. These three areas: visual design, language, and culture are important in this research when looking at the relationship between unique orthographies and designing resources. To find out the background of this inquiry, I will relate language to culture in the form of cultural identity, look at how design is connected to endangered Native American languages and ultimately connect how cultural identity and design impacts the Osage language.

This chapter reviews and defines what identity is and how it relates to language and design, the evolvement of American Indian orthography development, and teaching resources that are used to teach unique writing systems or orthographies. Considering this, two major areas take focus: (a) relationships between design, language, and culture, and (b) approaches to learning letterforms. A review of the relationships between design, language, and culture provides an understanding of the context and structure of which orthography design is related to the experience of learning Osage. Approaches to learning letterforms is reviewed to provide a context for teaching aids and theories related to engaging language learners through visual and non-visual processing. This supports the development and use of learning aids in the Osage classroom. Concluding the chapter, I will present a conceptual framework that is used and applied to the rest of the study.

Relationships between Design, Language, and Culture

What is language? According to Daniels (1996) “Language is a natural product of the human mind... while writing is a deliberate product of human intellect... Language

continuously develops and changes without the conscious interference of its speakers, but writing can be petrified or reformed or adapted or adopted at will.” While I agree with Daniels in that writing is a deliberate product of human intellect, I would add that it may also become a natural product of visual and personal identity, adding to the dissection of language. This idea becomes important as I explore the role of the Osage orthography in the experience of learning Osage.

In 2013, I had the opportunity to work on a unique typeface design for the Osage orthography of the Osage Nation of Oklahoma. While doing so, I noticed that the orthography itself, as a form, gives the Osage community a tremendous sense of pride and empowerment. There is a strong sense of identity in the visual written form of a language that designers can connect and capitalize on. Robinson and Gadelii (2003) also made this connection to identity as they refer to small minority groups in Africa, Asia, and the Pacific in their *Writing unwritten languages — a guide to the process*. It is here that they mention a potential for increased opportunities which include an “opportunity for cultural expression and wider communication of cultural values and particularities; ...increased cultural and linguistic self-confidence and thus greater security in one’s own identity; appreciation by others of the unique richness of the language; [and] the option to use the language in the electronic media” (p. 3).

In addition, Davis (2015) explores an ethnolinguistic identity connection to the Chickasaw language through affiliation of non-speakers in the community and the strategies with revitalization. Davis uses Gayley Modan’s concept of centralized and marginalized identities in structuring her approach to identity. Modan proposes three kinds of local identities: “1) various identities for the neighborhood itself, 2) identities

that speakers create for themselves as core community members, which we can call centralized identities, and 3) identities that speakers create for others as lesser community members, which we can refer to as marginalized identities” (p. 7). This research talks about the discursive practices of identity negotiation and introduces the concept of *language affiliation* and identity, but it doesn’t look at the letterforms themselves as an avenue of this relationship. An example of language affiliation that Davis (2015) presents in terms of a strong factor of identifying as Chickasaw is “referencing a close relation to someone who is or was a speaker of Chickasaw garners cultural capital even for those who lack their own linguistic expertise.” This idea is intriguing because it goes outside of actual language learners and this concept is also evident amongst Osage tribal members and community members that do not know the language.

Also, Davis (2015) points out a significant factor in language ideologies in saying that Native American communities often have multiple and competing language ideologies. This helps explain the idea behind the differences in not only different Native American communities, but also the ways ideologies differ in reference to language revitalization—which in turn may construct a different relationship to identity within the language and letterforms themselves. The following sections seek to explain the idea of this relationship further.

Identity

What is identity? Identity is tricky to define as it has an ever-changing definition, especially in terms of cultural or indigenous identity. In this study, I will use identity as defined by Weaver (2010). Weaver states that “most theorists agree that identity exists, not solely within an individual or category of individuals but through a difference in

relationship with others” (p. 223). Therefore, Weaver determined that identity changes every time a relationship forms and this happens quite often.

When talking about identity for American Indians or indigenous people or whichever group identity we are to refer to, is it better to say American Indian, Native American, Indigenous, Indian? Ojibwe, Ojibwa, Anishinaabe, Chippewa? Osage, Wazhazhe, Pasulee^? Cherokee, Alaskan Native, Inuit, Hawaiian? And what makes up the chosen identity? Here identity dwindles down in layers, and this is where the interrelationships between indigenous people get more complex as there is a long history from which identity has evolved and continues to evolve.

Prior to contact with Europeans, “indigenous people identified themselves as distinct from other indigenous people and constructed their identities in this way” (Weaver, 2010). Weaver talks about how identities were constructed within each tribe. The way hair was kept, bodies were clothed, foods were harvested, tribal symbolisms, taboos, tattoos, songs, stories, languages, ceremonies, etc. all were used to create unique identities for indigenous peoples *amongst* indigenous peoples. This was the only kind of identity that was needed for recognizing relationships with one another. There were no “Native American” or “American Indian”, “Indigenous”, or “Indian” terminology that gave identity markers prior to contact. So, when the Europeans came, new relationships were formed which introduced new differences, establishing new identities. Introduced were differences in skin color and race, and moreover civilized and uncivilized categorizations.

Today, it seems that identity is intermixed—and publicized as such—as relationships to others are realized, but it is still often that the only difference in

relationships that are recognized in mainstream society are in these larger categorizations and less about culture and tribal attributes. The forms of the past, the constructed identities that ancestors created, are often only apparent in private cultural ceremonies, dances, and traditional or community gatherings in which tribal regalia, adornments or other tribal traits are prominent, and by geographic location. As is, it becomes increasingly more important to hang onto those unique identity factors to preserve tribal identity.

Furthermore, in Margaret Kovach's *Indigenous Methodologies* (1964), another avenue of identity is the idea of being culturally grounded or having a relationship with one's culture, gaining cultural knowledge from being born in a native community and raised in the culture as opposed to not having that relationship to one's ancestry. In terms of language learning, this idea does influence language learners. Those that are more culturally grounded may identify more with preserving the language as a treasure that cannot be lost rather than those who are not culturally grounded.

Language and Identity

Languages were different within each group of Indigenous people and was also a strong identity factor prior to contact with Europeans. When Europeans came, they became the dominant side of the relationships with Indigenous peoples. Consequently, the English language was introduced, and a language shift transpired as English became the dominant language for communication (the result of several historical events). This ultimately caused many Indigenous languages to be seldom used or lost entirely. Thus, it is important to recognize that as Indigenous people were losing languages, an important identity factor was lost as well. Being aware of language as an identity factor becomes

more important as situations of language loss today is increasingly occurring amongst Indigenous Nations. Therefore, language revitalization and language maintenance become more important in preserving an identity of Indigenous peoples.

What's new with language today is that writing systems have been developed for many languages to communicate further. Written language is a language tool to enhance communication through education, media, and other social aspects, especially with the development of technology. However, historically, written languages were not a part of Indigenous identities. Are they today? Should they be? This has always been a controversial topic in which there are several pros and cons but in terms of orthography development, it is important to communicate that there may be a stronger relationship that is a natural product of visual identity that becomes part of oneself.

Developments of Unique Writing Systems

Orthographies, syllabaries, and other unique writing systems have developed amongst American Indian languages. Yet, there are still contrasting sides to whether writing systems should be a consideration when working on the revitalization of American Indian languages.

With prioritized efforts focused on oral language teaching methods, some may acknowledge writing systems but show disinterest in them as a contributing factor in learning a language. Hinton (2002) hits this topic hard with stating, "If you want to learn to speak a language and understand others who are speaking it, you must learn it through speaking and hearing it, not through reading and writing it. This is true whether or not there actually is an official writing system for the language" (p.1). Additionally, Hinton proclaims, "you have to hear and say words to learn them. The words you are going to

learn should be recorded in your mind according to their sound, not according to a visual system” (p.2). While these are valid reasons for oral language teaching in Indigenous communities, there isn’t a case where the visual design of an Indigenous language versus speaking an Indigenous language is tested. I have not found anything testing the validity of visual design on one’s natural intellect in language identity.

Speaking may be prioritized in a community to utilize fluent speakers’ time and value, but there are some communities that, because of the loss of fluent speakers and the high risk of losing the language, have no choice but to turn to forms of documentation that include the use and development of unique writing systems. When planning, endangered language groups must weigh decisions on when to push oral language education or to start the push into methods of documentation in order to save a language. Furthermore, there are more reasons and examples of use to support the use of writing systems in conjunction with language learning. Looking at unique writing systems is a first step to understanding their importance.

The first writing system for any American Indian tribal language was created for the Cherokee language (Figure 6). “The Cherokee writing system invented by Sequoyah and formally introduced to the Cherokee tribal council by him and his daughter in 1821 became widely used by the tribe within the span of a few years” (Cushman, 2011). When the Cherokee writing system was invented, the Cherokee people spoke the language fluently and used it all the time, so using the written language became easier to adapt to.

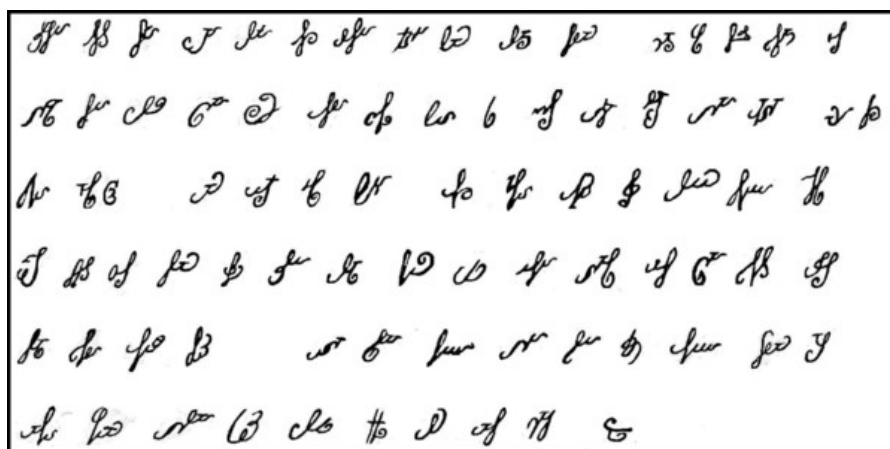


Figure 6. Cherokee Syllabary. Source: <http://www.examiner.com/article/the---secret---history---of---sequoya---s---cherokee---syllabary>

There are only a few unique letterforms that have been designed and developed since then and when they are developed; it is not uncommon that they are being developed for an endangered language. This is where questions are raised about whether time and energy should be focused on developing writing systems, and yes, in some instances it may not be the best decision, but in terms of identity, I would argue that as a unique orthography develops, a new relationship is formed which constructs an identity factor, and this is important.

Briefly looking at two additional examples: 1) the Western Cree Syllabics (a First Nation language) and 2) the Lushootseed Orthography (Figures 7 and 8), each have a unique design that separates the language from any other. I chose to display Western Cree syllabics because there is strong use within this Nation of this writing. The syllabics themselves are characters attached to alphabetical sounds which is similar to how the Osage orthography was designed.



Figure 7. Western Cree Syllabics. Source: http://en.wikipedia.org/wiki/Western_Cree_syllabics

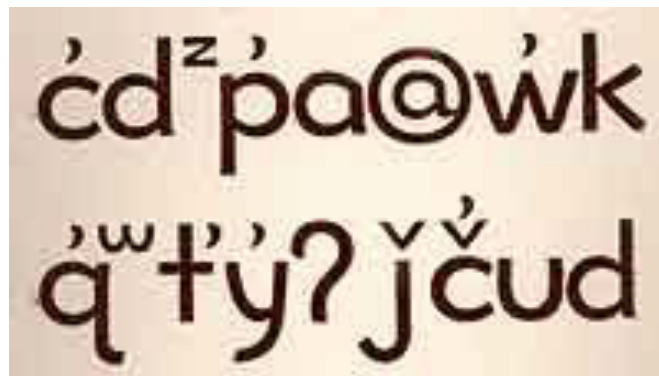


Figure 8. Lushootseed School Typeface. Source: <http://backspace.com/notes/images/lushootseed.jpg>

The Lushootseed language shows a beautifully developed typeface, named Lushootseed School by type designer Juliet Shen. Shen (2011) wanted to make the typeface look as beautiful as it sounded:

Lushootseed is indigenous to the place where it once thrived, spoken by peoples who revered the natural world that sustained them. The sound of it blends into the natural sounds of the Pacific Northwest: water lapping on the shore, wind rustling through cedar trees, the consonantal clicking of creatures in the wild. At our very first meeting, a master teacher pointed out to me that the written script did not do justice to the spoken language. I went home and listened to the recordings of elders telling traditional

stories, and made it my design brief to produce a typeface that looked as graceful on the page as the language sounded. (p.22).

This design was influenced by the traditional Salish art, specifically, the woodcarvings. Each letter was made individually to keep the idea of a wood carved letter in which no two pieces would be the same. The irregularities in woodcarvings are one of the qualities that make it so special and meaningful because it starts to get into a more visual approach that lends itself to other identity factors within the culture of the tribe.

These examples show language as a visual form that has evolved to become strong harmonious identity factors in their communities.

Letterforms and Identity

With unique orthographies, gradual language use on flyers starts to appear in other instances that are outside of language events. In the following images in Figure 10, we see this shift in use to everyday things like road signs and building signs, art, clothing, license plates, and even in tattoos.



Figure 10. Examples of Visual Design.

Use is heavy in signs within the area of a community. When you enter a town that is part of a tribal community, it is identified by the use of these symbols. When it is used in clothing, it can be seen anywhere on a person and is often a conversation starter about a language. When it is used in forms of art such as in the mural in Figure 11, this expression is an example of community and cultural identity, pride, and representation.



Figure 11. Osage Language Mural in Pawhuska, Oklahoma

When it starts appearing in these other areas, unique orthographies become more symbolic in nature and serves as an identity marker for a Nation. They become even more of a visual identity. This trend shows pride. In the case of the Osage orthography, it has proven to be a tool for the use of perseverance and empowerment. This is important as we consider it being used in the Osage language classroom as well and what effects that may have on beginning level students.

These examples show an increase in the visual implementation of unique orthographies in American Indian communities. This use has the potential to contribute to overall identity. The more unique a writing system is in terms of its design and development, the more identifiable it is for a Nation. A strong identity can promote a sense of empowerment and a sense of place and gives pride to those who associate it with

their own community. This pride is not only important to both Native and non-Native adults in the community, but for the children of the community as well.



Figure 12. Children with Pride in Language Learning. Source: Osage Nation language department and Lushootseed (Shen, 2011).

Children are our future and if orthography can be used in conjunction with learning a language to enhance self-motivation and desire to learn, then it is a good thing. Being able to read, write, and speak the language uniformly together in homes, schools, events, councils, and communities would be the ultimate goal in not only preserving our language but also preserving our culture and identity.

As this study looks further into the role of the Osage orthography in the experience of learning Osage, all these factors and relationships between design, language, and culture form together to become a backbone to learning. It is important to recognize the importance that the Osage orthography brings to community and cultural identity, and to keep these ideas in mind as we investigate the experiences of learning Osage.

Approaches to Letter Learning

After navigating the relationship of design, language, and culture, the focus now shifts to the underlying research questions that explore the ways students learn letterforms and how the stencils are used. It is important to make a point that Indigenous peoples are minorities and have different cultural approaches to learning and mindsets which are grounded in different Indigenous worldviews which relate to the approaches and understandings that will occur in the language learning classrooms. This is significant as it supports the purpose of this research and the approach that I took in looking into the approaches to letter learning and later in the use of my conceptual framework.

Throughout existing literature, most sources involve approaches and insights for the learning of the English alphabet and alphabet knowledge but not much analysis on Indigenous language learning or unique orthographies. Among the literature about how children learn languages, there's an overabundance of research that include methods for children with impairments, disabilities, and deficits but not too much in the area of methods for young minorities or learning with interactive or hands-on tools. Among the literature for minority language learning methods, much of it focuses on literacy and not the use of learning aids or designed resources.

One study identifies a letter-name to letter sound comparison. In Stahl (2013), there are key considerations for implementing effective instruction of the alphabet that expands on "how children learn letters and the best ways to teach the alphabet" (p. 261). Stahl talks about the comparison of letter-name and letter-sound learning in North America and England which is a separate approach to the introduction of letter names and

uppercase letters in North America, whereas in England rarely use this approach, instead using letter sounds to refer to letters. Stahl says that “letter-name knowledge is the strongest predictor of a child’s knowledge of letter sounds” hinting that it may be a better strategy to learn the letter-name first. There are different reasons for each approach, but it is interesting that the Montessori method of learning uses the letter sound approach first before introducing the letter-name association (Stahl, p. 263). In the Osage language, it is important to note that there are no letter names for the letterforms of the orthography. This doesn’t mean that there will never be letter names, but I didn’t make that connection until reading through this study.

Learning Tools

I will now briefly review two comparative approaches and examples of learning tools. These examples exhibit the Cherokee syllabary and the Lushootseed language that were mentioned in the identity section. I wanted to look at these two languages to see if there was any research related to their learning resources as they are leading the way in the development of learning tools and continue to set the bar for revitalization campaigns.

When I visited the Cherokee Nation Museum in Tahlequah, Oklahoma, there was a set of learning blocks that contained the Cherokee syllabary on them, they were similar to those shown in Figure 13. These building blocks are marvelous and are one example of designed objects that promote language learning. This is a great example of a potential learning aid. As people have the natural curiosity and a natural ability to learn, each block in this example is “debossed and printed with animal images and numbers” (Uncle Goose, p. 1) and is printed with child-safe inks.



Figure 13. Cherokee blocks. Retrieved from <https://unclegoose.com/product/cherokee-blocks-2/>.

Another learning tool found on the Cherokee Gift Shop online store, is a set of flashcards with the syllabary on them, as well as a “Let’s Write Cherokee” workbook (Figure 14). The flashcards are good at recognizing the sounds of the syllabary and are designed in a simple way to enhance memory skills.

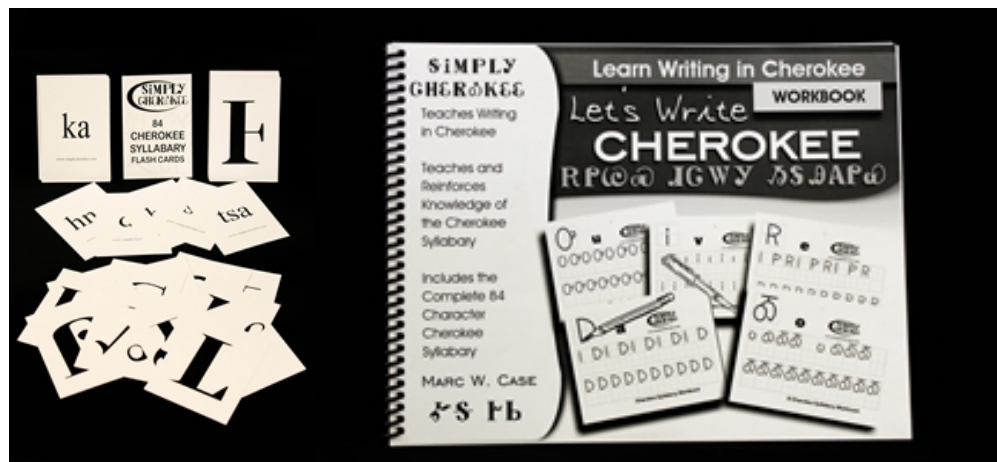


Figure 14. Cherokee language flashcards and workbook. Retrieved from <http://www.cherokeegiftshop.com/>.

The workbook may be meant for older language learners that have the coordination and dexterity to write, but there are many kinds of workbooks that help all ages in learning.

When looking to the Lushootseed language, a wonderful wood type press has been created for use. Figure 15 depicts this press, “Lushootseed wood type created by the Hamilton Museum of Wood Type & Printing, Two Rivers, Wisconsin. The press was used at the 2010 Tulalip Lushootseed Language Camp in Washington” (Shen, 2011, p. 21).

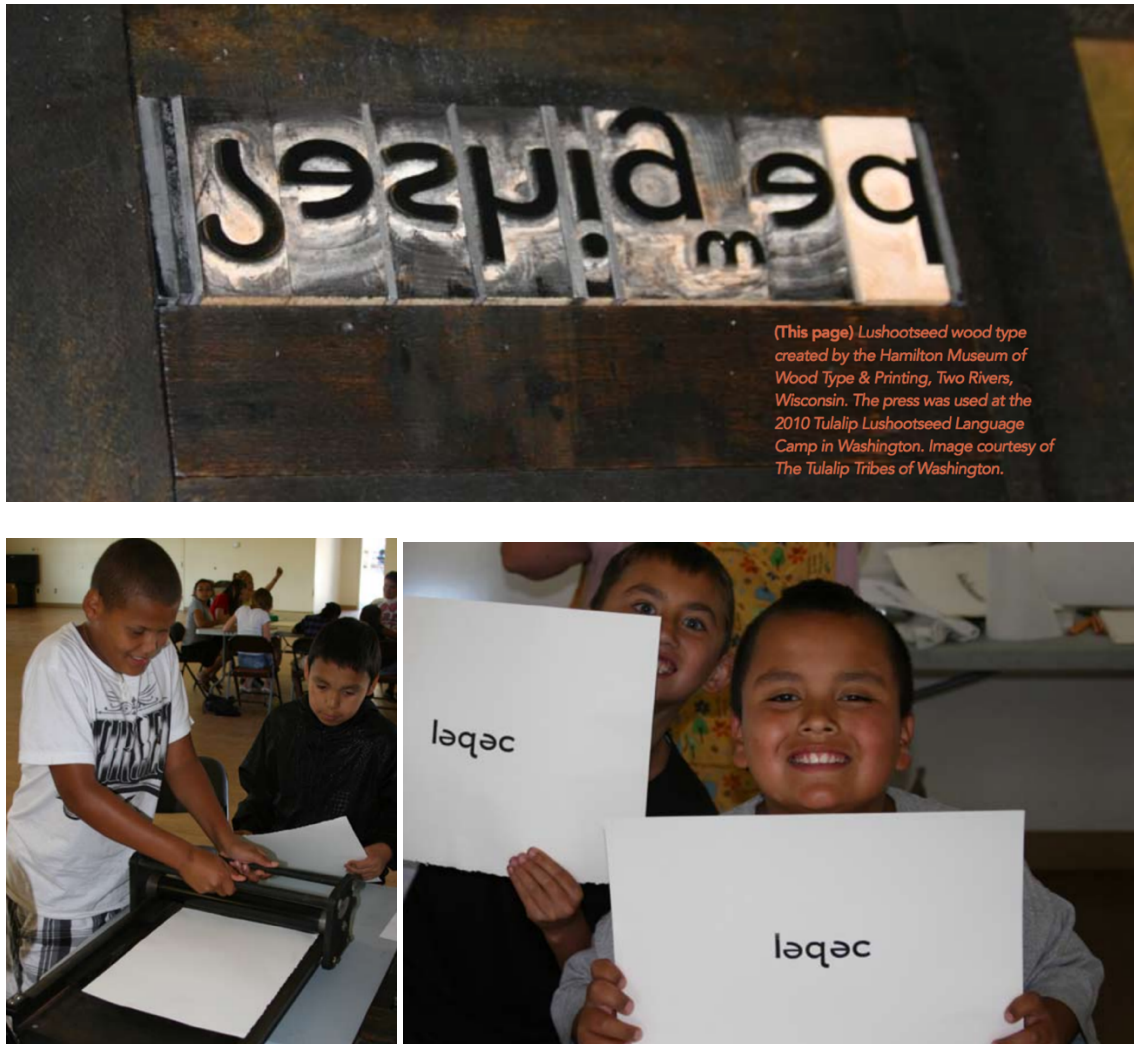


Figure 15. Lushootseed wood type and children. Retrieved from J. Shen, 2011.

The photos show that the children seem to be enjoying this hands-on interactive activity, working with the letterpress and producing words that they are learning while using the unique letterforms of the Lushootseed language.

In searching for these examples, I did not find any research to support language learning in these specific contexts. Therefore, I conclude that as visual learning increases in education, more studies are needed to address specific learning strategies and it can start with looking at language learning experiences.

Learning Theories

Learning theories address how learning happens. Two notable theories are Jean Piaget's Stage Theory and Vygotsky's Sociocultural Theory.

"Jean Piaget (1896 – 1980) was the first to state that learning is a developmental cognitive process, that students create knowledge rather than receive knowledge from the teacher. He recognized that students construct knowledge based on their experiences, and that how they do so is related to their biological, physical, and mental stage of development." (Hammond, Austin, Orcutt, & Rosso, 2001, p. 6). Piaget's stage theory of cognitive development was developed after observations of his own children, observing how they learn things and what they could do.

In developing the Sociocultural theory, Vygotsky looks at the contribution the society makes to individual development. "This theory stresses the interaction between developing people and the culture in which they live. This theory suggests that human learning is largely a social process" (Cherry, p. 1). Vygotsky was a great thinker that followed in Piaget's path and furthered his theory due to his deep interest in the role of the social environment, included tools and cultural objects, cultural beliefs, and attitudes, as well as people, as agents in developing thinking.

Learning can occur in social contexts and cultural contexts, "the associations people make and understandings they develop are dependent upon and influenced by

what is valued and what is experienced at home, in the community, and within the classroom learning environment. Culture influences the knowledge and experiences people bring to the classroom, the ways in which they communicate, the expectations that have for how learning will occur, and the ideas they have about what is worth learning” (Hammond et al., p.11).

Dual Code Theory and Visuo-haptics

The Dual code theory is a theory of cognition that pairs visual and non-visual processing in learning content. Developed by Allan Paivio in the 1960s, this explicit theory is key to engaging language learners. Paivio used the idea that visual and verbal information are processed differently and the formation of mental images aids in learning.

In terms of visuo-haptics, a study conducted by Morris, Tan, Barbagli, Chang, and Salisbury (2007) finds that “recall following visuohaptic training is significantly more accurate than recall following visual or haptic training alone, although haptic training alone is inferior to visual training alone” (p. 1).

Similarly, Bara, Gentaz, and Colé (2007) tested haptics in learning to read with children in low socio-economic status families. Their research tested (HVAM) visual and haptic exploration of letters and compared them to just (VAM) visual exploration of letters. Results shows that “performance in the letter recognition task and in the initial phoneme identification task were higher after HVAM training than after VAM training in kindergarten” concluding that visuo-haptic exploration enables the children to increase performance on knowledge (Bara et al., 2007).

Haptic learners learn better by touch—when you can do, experience, experiment, and just move, getting active with things you want to remember. Visual learners learn better through seeing or reading. The term visuo-haptic is a combination of these two learning methods in a verbal and a non-verbal feature, which supports the dual-coding theory.

In terms of learning letters, these ideas are connected to the cognitive development of learning a language. Therefore, learning the Osage language by both verbal and non-verbal processing such as using learning aids to learn the visual letterforms and the sounds of the orthography while in both a social and cultural context, may improve cognition based on these theoretical frameworks. Furthermore, the Osage orthography stencils may provide the element of touch to aid in a visuo-haptic approach to learning and obtaining knowledge.

Conceptual Framework

As I started to develop a conceptual framework for this study, I started reading about other work with indigenous people and communities. Kovach (2009), author of *Indigenous Methodologies*, explains the idea of an indigenous research (conceptual) framework that acknowledges the indigenous world view in terms of epistemology, theory of knowledge (Figure 16). “Conceptual frameworks make visible the way we see the world. Within research, these frameworks are either transparent (i.e., through form) or not, yet they are always present. The rationale for explicit representation of one’s conceptual framework is that it provides insight into a researcher’s beliefs about knowledge production, in general, and how those beliefs will impact the research project”

(Kovach, 41). Kovach’s framework is set up purposefully without arrows, as it is more of a “nest”, and an in and out, back and forth pathway, or web-like structure.



Figure 16. An indigenous research conceptual framework based on Nehiyaw-centered methodology.

In this regard, I have prepared a similar model based on this idea that will act as a guide when carrying out the details and the proposed methods in gathering and analyzing this research. The construct of my framework (Figure 17) works off the research questions and the overall purpose of this study.

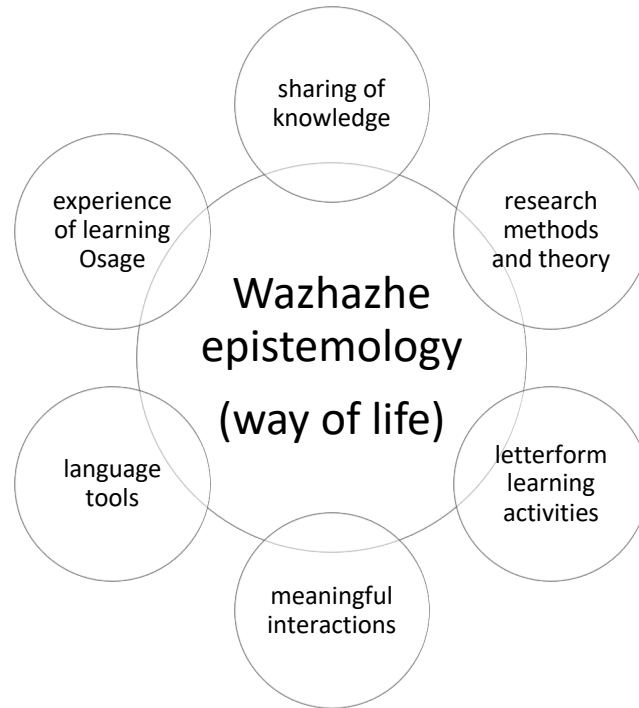


Figure 17. Conceptual framework

In the center is the idea of indigenous research framework, surrounded by (a) process: sharing of knowledge, (b) research methods and theory, (c) letterform learning activities, (d) meaningful interactions, (e) language tools, (f) experience of learning Osage. This conceptual framework aims to grasp the concept of identity within the Osage community, which plays an important role in the purpose of this study, my knowledge production, and analysis of findings.

Methodology

The purpose of this study was to understand the specific needs and ideal sizes for the different uses of the Osage orthography stencils within the beginning level Osage language classrooms and to further design and develop these tools to allow for the best learning advantages and outcomes. The goal was to provide the Osage orthography stencils to the teachers at the Osage Nation language department and to learn about the relationship between learning/teaching a unique orthography and how designed materials such as the Osage orthography stencils could make a difference.

A better understanding of these interactions and acquired knowledge would allow teachers and designers to develop prospective learning aids, tools, and teaching resources that contribute to the revitalization of the Osage language and provide examples to other Native American languages. To understand the importance of this relationship, the study addresses these research questions: (a) What is the role of the Osage orthography in the experience of learning Osage? (b) How do students interact with and learn the shapes of the Osage letterforms? Do the Osage orthography stencils provide help? (c) What effect does the use of stencils have on the experience of learning Osage? (d) What designed resources or teaching aids do teachers need to further enhance Osage student learning?

This chapter describes the study's research methodology and includes discussions around the following areas: (a) rationale for qualitative research design, (b) rationale for research methods, (c) study population, (d) research setting, (e) overview of research design, (f) literature review, (g) IRB approval, (h) methods of data collection, (i) analysis and synthesis of data, (j) ethical considerations, and (k) limitations.

Rationale for Qualitative Research Design

The research methodology chosen for this study is qualitative. Qualitative methodology implies an emphasis on discovery and description, and the objectives are generally focused on extracting and interpreting the meaning of experience.

As part of an exploratory project in the Spring of 2015, an informal pilot study was designed to gauge the interest and potential need for teaching resources within the Osage language department in Fairfax, Oklahoma. The need was for more teaching resources to be developed and there is no research on the student and teacher experiences of this type of work.

I had a discussion with the Osage language teacher about the need for new ways to learn the new Osage orthography within the beginning level Osage language classroom that served students aged 5-12 years. There was a specific need for tools to help with learning the Osage orthography. It was expressed that one of the first learning projects was to have students make their own flash cards. At that time, students were cutting out pre-printed orthography letters and gluing onto construction paper, so we talked about creating a tool that students would be able to use to assist them in writing and creating their own orthography letterforms. Therefore, it was determined that a single set of individual stencils for each letterform of the Osage orthography would be a great first tool to have in the classroom. This resource was then designed using the typeface I designed in my master's thesis project and polyethylene terephthalate (PET) material was used for its flexibility and thin nature. These tools were then disseminated to the Osage language department in Fairfax, Oklahoma.

In January 2017—in a follow-up discussion at the Osage language department in Fairfax, Oklahoma—positive feedback for the individual stencil set was received. A desire to design and develop additional learning aids for similar uses in the classroom and an inquiry for new stencils in different sizes was requested. Specifically, after using the first set of individual stencils, smaller sets were desired because there were longer Osage words that they wanted to include on posters and projects where the larger stencils would inhibit them to write these words on one line. Additionally, other language departments outside of the Fairfax Osage language department expressed the desire to have sets of stencils for their own classrooms. To understand the specific needs and ideal sizes for the different uses within the classroom became part of the research process that this study presents. This informal pilot study and follow-up dialogue including the proposal to add different sizes of Osage orthography stencils are used to justify the continuation, design, and development of new stencils for this study and the subsequent research methods.

Rationale for Research Methods

The research methods chosen for this study are qualitative observation and interviews. Specifically, naturalistic observation and semi-structured interviews. In a naturalistic observation approach, “qualitative researchers use observation as a process by which people interacting in their natural settings are studied so that their behaviors and words can be put into their proper context” (Angrosino, 2007, p. 2). “Such inquiry is conducted in settings where people naturally interact, as opposed to specially designed laboratories or clinical/experimental settings” (Angrosino, 2007, p. 2). It is important to note that using naturalistic observation as a data collection tool is “different from the kinds of casual ‘seeing’ that we do in the course of everyday life, even if it in fact stems

from those very ordinary life skills. To be useful for research, observation must be systematic, which means it must be conducted carefully, with precise notation that allows for the efficient and orderly retrieval, categorization, and analysis of information (Adler & Adler, 1994)” (Angrosino, 2007, p. 2).

Naturalistic observation was used to learn and observe the effectiveness and interactivity between the Osage orthography stencils and the Osage language students in their natural setting, the Osage language classroom, and to discover, extract and interpret the meaning of that experience.

Semi-structured interviews with the Osage language teachers served as a method to gather data that has resulted over a longer period. As the Osage language teachers interact with and observe students daily, in-depth information was obtained about how students learn and how teachers teach the letterforms of the Osage orthography. Interviews also served to gather views of the language learning experience as it relates to the Osage orthography and further needs for design resources.

Study Population

The population under study are the Osage language teachers (ages 18+) that teach the beginning level Osage language classes and the Osage language students (all ages) that are in the beginning level Osage language classes.

Permission was sought and gained from the Osage Nation, the Principal Chief of the Osage Nation, and the Osage Language department director. Osage language teachers were recruited through the Osage Language Department by the Osage language department director. Potential teacher participants were asked to participate in the study and given informational letters and informed consent forms [Appendix B].

Participants: The teacher participants were those who consented to participate in this study by completing a consent form. Student participants were those that were in the consenting teacher's classrooms. Once a teacher agreed and consented to participate, informational letters and consent forms were given to the teacher to give to their students who are 18+ and to the student's parent/guardian if under 18 years old to get parental consent.

Exclusion Criteria: Osage language students 18+ who did not sign the consent form and Osage language students under the age of 18 whose parents/guardians did not sign the consent form and those students who did not show up to class during the study duration.

Research Setting

The study sites were at the Osage Nation language sites in Fairfax and Pawhuska, Oklahoma—including the community and high school classrooms, the Wazhazhe Early Learning Academy, and the Osage Immersion School which is now named Daposka Ahnkodapi Elementary. Observational data collection took place in the natural environments in which the Osage language students learn at each one of these sites. Interviews took place in a public setting that was convenient to the participants and allowed for private conversation.

Overview of Research Design

The following list summarizes the steps to carry out this research. Following this list is a more in-depth discussion of this process.

1. An informal pilot study involving the design and dissemination of a set of individual stencils in the Osage letterforms was a preliminary step in gauging

interest in the provision, development, and design of teaching resources to help build the Osage Nation language learning classroom.

2. Select literature was reviewed to study the contributions of other researchers and writers in the areas of learning theories, letterform learning and relationship of orthography development and identity of indigenous languages.
3. Following the preliminary oral examination, approval was acquired from the IRB to proceed with the research. The IRB approval process involves outlining all procedures and processes needed to ensure adherence to standards put forth for the study of human subjects, including participants' confidentiality and informed consent (Bloomberg, 2012, p. 120).
4. A follow-up meeting with the Osage language department regarding the informal pilot study was scheduled and the sample interview sheet [Appendix A] was given to identify and gather feedback. The information that was gathered informed the design and sizes of the new stencils developed for this study.
5. Potential Osage language teachers were identified and those who agreed to participate were contacted to set up the time and days of observations. Potential Osage language students were identified by the teachers and those who agreed to participate were given consent forms and informed of the study [Appendix B].
6. Observations occurred in each of the community classrooms over a period of two weeks. All activities were observed where stencils were used in the classrooms.
7. Semi-structured interviews were conducted with the participating Osage language teachers. A consent form for interviews was given to each participating Osage

language teacher [Appendix C] and signed. A sample interview sheet [Appendix D] was used to identify and gather their views.

8. Observation and interview data were transcribed into a descriptive narrative and then analyzed and coded to form emerging categories to themes using an adaptation from Tesch's Eight Steps in the Coding Process as outlined in Creswell (2014).

Literature Review

An ongoing review of literature was done to inform this study. Two areas of focus included the relationships between language, identity, and design, and the approaches to learning letterforms. The focus of this review was to better understand the context and structure under which language is related to design, and to provide a context for teaching resources and theories related to engaging language learnings through visual and non-visual processing.

IRB Approval

Following the literature review, IRB approval was acquired and approved for all procedures and processes involved in this study.

Methods of Data Collection

The use of multiple methods and triangulation is critical in attempting to obtain an in-depth understanding of the phenomenon under study. This strategy adds rigor, breadth, and depth to the study and provides corroborative evidence of the data obtained (Creswell, 2014; Denzin & Lincoln, 2011). Therefore, this study engaged different data collection methods, including an informal pilot study, observation, and semi-structured interviews.

Informal Pilot Study

In the Spring of 2015, I met with an Osage language teacher and discussed potential teaching resources that could be designed and developed to increase an Osage student's language learning, as well as serve as a resource and tool the teacher could use to help teach the Osage orthography.

We discussed the need for new ways to learn the new Osage orthography within the beginning level Osage language classroom that served students aged 5-12 years. There was a specific need for tools to help with learning the Osage orthography. It was expressed that one of the first learning projects was to have students make their own flash cards. At that time, students were cutting out pre-printed orthography letters and gluing onto construction paper, so we talked about creating a tool that students would be able to use to assist them in writing and creating their own orthography letterforms. Therefore, it was determined that a single set of individual stencils for each letterform of the Osage orthography would be a great first tool to have in the classroom. This resource was then designed using the typeface I designed in my master's thesis project and polyethylene terephthalate (PET) material was used for its flexibility and thin nature. These tools were then disseminated to the Osage language department in Fairfax, Oklahoma.

Initial Stencil Design. The set of stencils were designed with one for each of the Osage letterforms and accent marks (Figure 18). The set of stencils were designed at one size, yielding a 2-inch cap-height, and laser cut on a variety of materials before deciding on the polyethylene terephthalate (PET) material as the best for use in the classroom setting. This material was determined to be best because of its flexibility and thin nature. Rounded corners were placed on each stencil for safety reasons and ease of use. Identity

place markers were put into the upper left corner of each stencil as a wayfinding cue for the correct orientation of each symbol. The letterforms were designed and tested to allow for the most optimal use of the designed gaps in which the letterforms could be most recognizable. This design considers the spacing of the bridges and islands of the stencil for optimal usability and legibility of the letters of the design. The set of stencils was given to the Osage language department in Fairfax, Oklahoma for use in whatever they determined. Since then, the Osage students and teachers in Fairfax, Oklahoma have been using them to develop classroom learning materials, posters and other class projects, examples are shown in Figures 19-21.

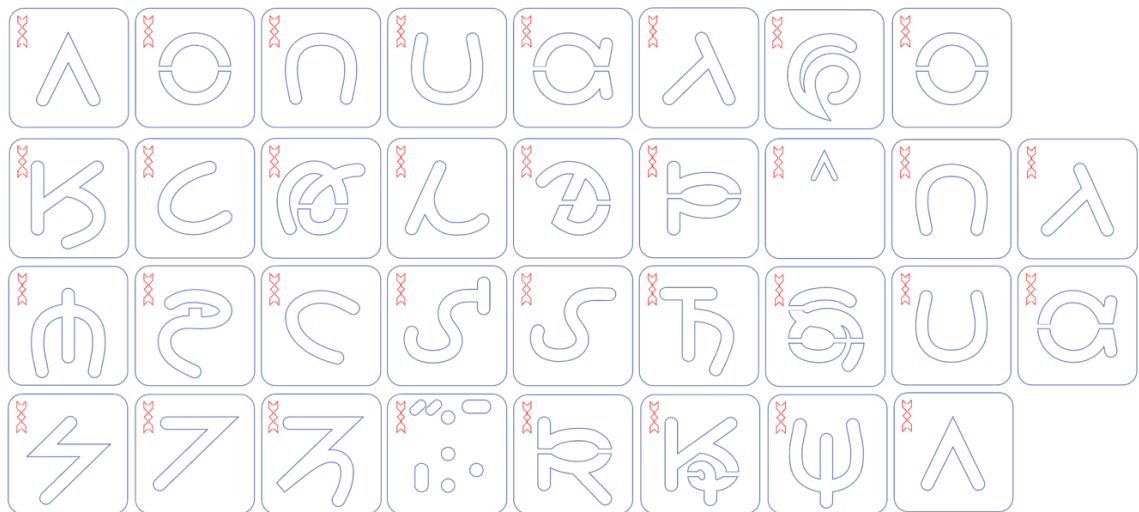


Figure 18. Individual stencil set designed for informal pilot study.



Figure 19. Osage language teacher creating classroom materials with the stencils in August 2015.



Figure 20. Osage language students using stencils to make flashcards in 2016.

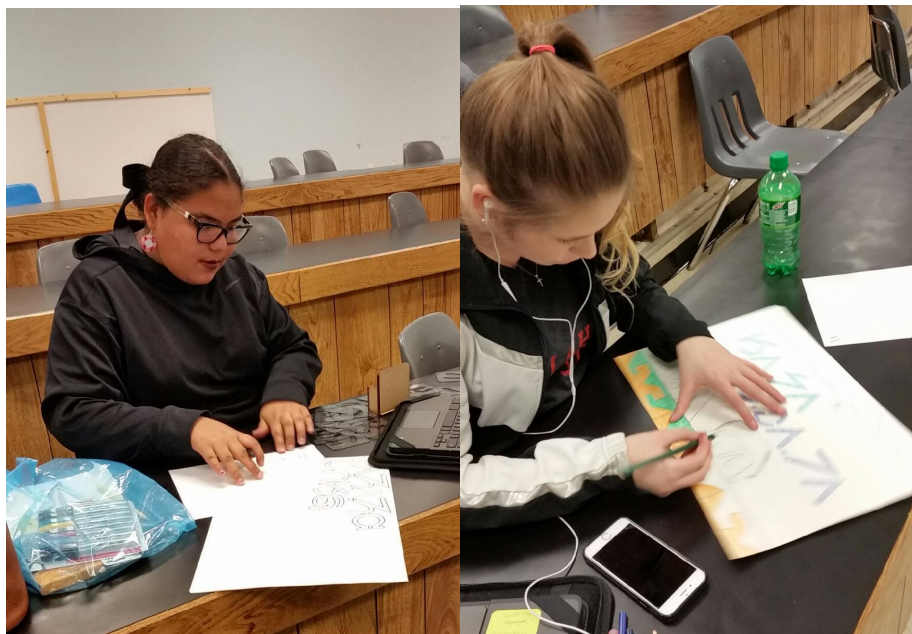


Figure 21. Osage language students using stencils to create posters for a language fair poster competition in 2017.

Informal Pilot Results. In January 2017—in a follow-up discussion at the Osage language department in Fairfax, Oklahoma. The discussion included positive feedback for the stencil sets and a wish to design and develop more of the stencil sets, but at different sizes. Specifically, after using the first set of individual stencils, smaller sets were desired because there were longer Osage words that they wanted to include on posters and projects where the larger stencils would inhibit them to write these words on one line. Additionally, other language departments outside of the Fairfax Osage language department expressed the desire to have sets of stencils for their own classrooms.

One specific example for this request was that the Native American Youth language fair entries that the students participate in each year are required to be on a 11"x17" paper and the current stencil size limits the number of letters to be used. It was mentioned that there is a wish for new stencils that are big enough to see, yet smaller than the set that they currently have.

Follow-up Meeting. A follow-up meeting with the Osage language teacher was officially held after IRB approval. The sample interview sheet [Appendix A] was given to identify and gather specific feedback for their needs. The information that was gathered informed the design and sizes of the new stencils for this study and provided more insight to the usefulness in the experience of learning Osage.

Accompanying this meeting, photos were taken of new materials that were created and on display within the Osage language classroom. Figure 22 shows how the stencils were used, “we used them to make fruit, colors and numbers charts big enough for the classroom to see and use when practicing Osage thoughts. They can see them from far away and it helps them on pronunciation” (Language Teacher). Here you can see where some of the longer words are being squished into the poster which informs the need and request for the use of smaller sized stencils.



Figure 22. Classroom materials: fruit, colors, and numbers.

New Stencil Designs. The results of this informal pilot study helped produce new ideas for new stencil designs for this research. The main request was to have stencils that produced smaller letters. Therefore, a smaller set of individual letters was designed to accompany the original individual letter set. This smaller letter set yielded a 1.5-inch cap-height as opposed to the 2-inch cap-height that the original stencils produced.

Any smaller individual stencil sets became too small for practical use. Therefore, I proposed and designed a full “all-in-one” stencil (Figure 23) to use in the study. This allowed for better usability for small letters as it allowed letterforms to be produced at a 1-inch cap-height. It also served as a comparison measure for the use of individual stencils vs. the use of one full “all-in-one” stencil sheet within the classrooms. Understanding any further design needs of these stencils are part of the interviewing process with the teachers as well as the observation in the classrooms and is presented in Chapter IV: Findings.



Figure 23. New full stencil design that includes all possible diacritics and spacing for equal placement in materials.

Observations

The observations of the Osage language students occurred in their natural learning environment, while they were engaged in learning the letterforms and interacting with stencils. Observations occurred in each of the community and language classrooms over a period of two weeks. Observations were documented in field notes, careful to avoid reporting interpretation rather than an objective account of what is observed. While in community settings, careful, objective notes were taken about what was seen. All accounts and observations were recorded as field notes in a field notebook (Mack, 2015, p. 13). All activities were observed where stencils were used in the classrooms. In instances where the stencils were used in activities with students, in classroom materials, and other visuals, photo documentation was taken and noted.

Participants and Dissemination. The participants in this study were comprised of five Osage language teachers and a total of 48 Osage language students at the Osage Nation language sites in Fairfax and Pawhuska, Oklahoma—including the community and high school classrooms, the Wazhazhe Early Learning Academy, and the Osage Immersion School, Daposka Ahnkodapi Elementary. All five teacher participants described themselves as children’s Osage language teachers. For reporting purposes, each teacher was assigned an identifier. The teachers came from various backgrounds and upon entering the study, the teachers each taught a different variety of classrooms and ages. Although, each teacher identified themselves as teaching beginning level classes of the Osage language.

While setting up the observation schedule with the Osage language teachers, it was learned that each classroom I would be observing contained students of different age

groups. Three of the Osage language teachers taught more than one beginner's Osage language class. Additionally, two Osage language teachers taught a group of beginning Osage teachers as students. The different student user groups that were observed were determined to be the following:

1. Student group A: ages 0-2
2. Student group B: 2-year olds
3. Student group C: ages 3-4
4. Student group D: ages 5-6
5. Student group E: ages 6-12
6. Student group F: High School students
7. Student group G: ages 6-17
8. Student group H: age 18+ Osage teachers in training

With this information, it was determined to disseminate an equal amount of stencil types and sizes for direct comparisons within each of the different student groups. Therefore, the constant variable in this observational part of this study is the stencils as language tools, and the comparison of the different student groups and their direct experiences with using the tools serves as the variables within this study.

Stencils were given to each participating teacher upon receipt of consent. Each participating teacher received the following:

1. One large set of individual letterform stencils (26 letters + 2 accents=28 total).
 - a. Dimensions: 3.25-inch by 3.25-inch, letterforms at a 2-inch cap-height
2. Two medium sets of individual letterform stencils (28/set).
 - a. Dimensions: 2.5-inch by 2.5-inch, letterforms at a 1.5-inch cap-height

3. One medium full “all-in-one” stencil.
 - a. Dimensions: 9.0625-inch by 13.75-inch, letterforms at a 1.5-inch cap-height
4. Two small full “all-in-one” stencils.
 - a. Dimensions: 6.375-inch by 9.0625-inch, letterforms at a 1-inch cap-height

All teachers were given individual and full stencil sets with no direction for the use of the stencils. All activities and use of stencils in the classroom were under their discretion. The observation schedule was set up after the dissemination. Each student group was observed during a 2-week period as determined by each Osage language teacher participant.

Interviews

After the observations were completed, semi-structured interviews were conducted with the Osage teachers using the interview sheet [Appendix D] to engage in a discussion about how students interact and learn the letterforms and their views of language as it relates to the experience of language learning. The interview sheet questions were derived from the research questions and research goals. Interviews were recorded and held with participants in a public setting convenient to participants, allowing for private conversation. Each participant was given a consent form to sign [Appendix C], for the interview to take place, recorded, and used in this study. The interview process was explained with an overview of the consent form and the process of recording of interviews to each participant.

The interview data was recorded using field notes as well as on a recorder. At the end of each interview, I asked each participant if there was anything else, they wanted to

tell me. This served as a member check to include any additional thoughts or clarification. Also, throughout the interview, I restated statements in order to clarify any misinterpretations.

Analysis and Synthesis of Data

Observations

Field notes and photo observations were gathered and refined into a descriptive narrative as soon as possible after collecting observation data. Refining the notes involved the following:

- (a) Time was scheduled to refine notes within 24 hours of the time field notes were made so that it was less likely to forget shorthand notes, abbreviations, and other things that may not have been written down as good note taking often triggers memory (Mack, 2015, p. 24).
- (b) Shorthand notes were refined into sentences so that anyone can read and understand the field notes (Mack, 2015, p. 24).
- (c) The narrative descriptive was composed from shorthand and key words. A narrative described what happened and what was learned about the study population and setting (Mack, 2015, p. 24).

Refining the photographs involved the following: Photographs were taken at the Osage language classrooms and surrounding environment. These photographs were tagged and organized into a database and used to illustrate the activities employed at the teacher's discretion.

Interviews

I understand that I have the responsibility to interpret the participants' ideas and perspectives accurately and impartially. Analysis procedures included transcribing, analyzing, and coding the interview data to form emerging categories to themes.

Transcribing interviews involved the following:

- (a) Each interview was transcribed word for word and put into a digital file.
- (b) After each interview was transcribed, the raw data was be checked for errors and completeness. This was to make sure there has not been an error or omission.
- (c) Each transcript was checked against the audio recording to check completeness.
- (d) Each transcript was then printed double-spaced with large enough side margins that allowed for data analysis.

Organizing Themes

To prepare for data analysis, the complete transcripts and notes from each interview was read through to look for themes. Themes were determined and deemed significant if the data answered the research questions and if any of the data jumped out to me, in reference to the significance of the study. The following is a list of the process that I took to determine themes. This process was adapted from Tesch's Eight Steps in the Coding Process as outlined in Creswell (2014):

- 1. Read through all data (each transcript and field notes) one by one.
- 2. Pre-code all data by underlining significant participant quotes or passages that struck the researcher in relation to the significance of the study or otherwise.
- 3. Generalize thoughts in left margin about underlying meaning of information.

4. Once each transcript is marked with generalized thoughts, gather these thoughts and put thoughts into different topics.
5. Make a list of all topics on a separate paper. Cluster together similar topics and organize into major, unique and leftover topics. These will evolve as sorting continues. Refer conceptual framework as a guide.
6. Abbreviate the topics as codes and write the codes next to the appropriate segments of the text.
7. Take list and go back to data. Try the preliminary organizing scheme to see if new topics and codes emerge.
8. Find the most descriptive wording for these topics/codes and turn them into categories (and sub-categories, if necessary). Reduce total list of categories by grouping codes that relate to each other.
9. Turn and/or group categories into themes.
10. Read through a few more times to check for other themes or important information that may have been missed.

This process used to turn codes into themes is illustrated in Figure 24, this model is called “a streamlined codes-to-theory model for qualitative inquiry” (Saldaña, 2012, p. 12).

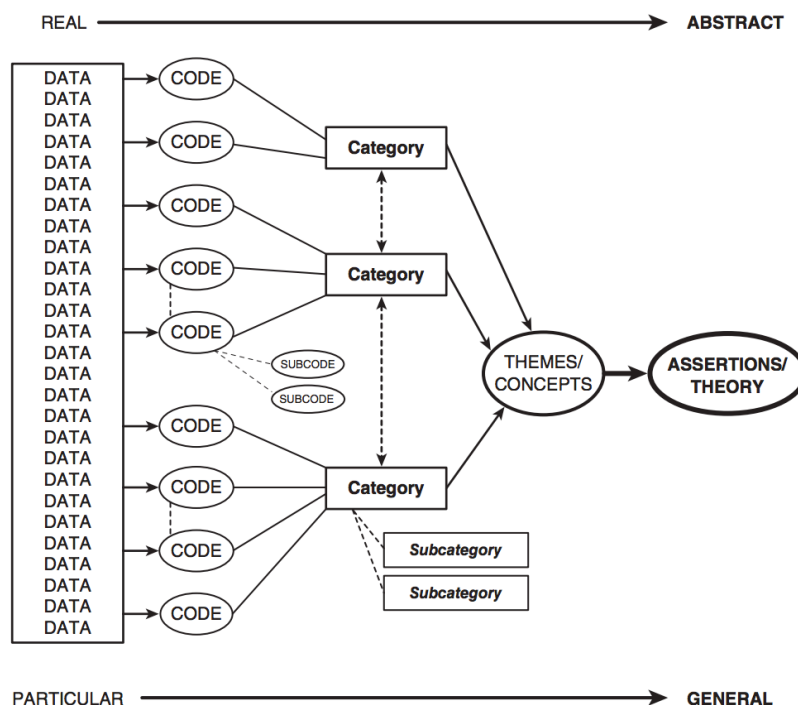


Figure 24 A streamlined codes-to-theory model for qualitative inquiry (Saldaña, 2012, p. 12).

Once all themes were identified, each theme was analyzed, summarized, and gathered into a written narrative and placed in the Findings section. Narratives support the overall significance of the study in relation to the research questions. Narratives are labeled and organized alphabetically.

Ethical Considerations

In conducting the research of this study, it was my intent to develop interview questions that do not sway the answers of the participants. It was also important to not have my own views influence viewpoints of the participants.

The importance of confidentiality is critical. The information provided was be treated in a confidential manner. Also, by distributing consent forms, individuals were informed of the nature of the study and chose whether to participate.

Findings

The purpose of this study was to understand the specific needs and ideal sizes for the different uses of the Osage orthography stencils within the beginning level Osage language classrooms and to further design and develop these tools to allow for the best learning advantages and outcomes. The goal was to provide the Osage orthography stencils to the teachers at the Osage Nation language department and to learn about the relationship between learning/teaching a unique orthography and how designed materials such as the Osage orthography stencils could make a difference. The following research questions informed the study: (a) What is the role of the Osage orthography in the experience of learning Osage? (b) How do students interact with and learn the shapes of the Osage letterforms? Do the Osage orthography stencils provide help? (c) What effect does the use of stencils have on the experience of learning Osage? (d) What designed resources or teaching aids do teachers need to further enhance Osage student learning?

This chapter presents the key findings categorized as 1) photo observations: includes key activities from each classroom/student group that was observed, 2) themes obtained from the following data sources: semi-structured interviews, the researcher's field notes of observations and photo observations within the Osage language classrooms and 3) the stencil feedback: collective feedback from the semi-structured interviews and observations informing design revisions for the stencils.

Photo Observations

During the naturalistic observations of the Osage language students in the Osage language classrooms, students engaged in various activities that yielded the use of the stencils as learning aids. Photos were taken in each student group to show all activities in

which the stencils were used. These photos are used to show how students learn the shapes of the Osage letterforms and how they interact with them. They also help exhibit the relationship of the use of stencils in the student experience of learning Osage. There was a variety of activities that the teachers created for their students to use the stencils.

The following shows and describes these activities and lists them by groups:

- 1) Student group A: ages 0-2. This activity was a freestyle approach where students were given the stencils and blank pieces of paper and crayons. They were left to explore and had teacher help in handling the stencils. The 1-2 year olds that could grasp a crayon participated. The teachers chose to use both the individual and the full sheet stencils. Teachers helped children find the openings in the stencils with the crayons. Students were more engaged with the individual stencils, but the concept of a stencil was barely understood. Some were more interested in the stencils as objects or toys. One student put the full sheet stencil on their face as a mask and was looking out through the holes. One student was instantly engaged after shown how to make one letter with the stencil. The satisfaction of completing one letter was shown.



Figure 25. Student Group A Stencil Activity

- 2) Student group B: 2-year olds. This classroom was the most active, both with curious minds and energy. Attention span was under 10 minutes. This activity was a freestyle approach where students were given the stencils and blank pieces of construction paper and painting supplies. They were left to explore and had teacher help in handling the stencils if they needed it. There was frustration with the stencils and the paint not automatically drying. This caused the letter to get smudged which made them upset. Despite this, when lifting a stencil up after putting paint on it and seeing the letter emerge, there was lots of joy and satisfaction in completing the task. The teachers chose to use the individual stencils for this activity.



Figure 26. Student Group B Stencil Activity

- 3) Student group C: ages 3-4. This classroom was very engaged in all activities that were presented. This activity was structured. The students were learning zoo animals in Osage; therefore, each student selected an animal to draw, and teachers helped

students write the Osage word with the stencils next to their drawing. When the drawings were finished, a book was created with all the student's art. There was a variety of ways the students colored in the stencil lettering including using single line strokes of colors made with crayons, using multiple colors to fill in the letters, and using multiple colors in one letter. Some chose to fill in the letters with color directly in the stencil, others chose to outline the letter first with the stencil then color in the letter after the stencil was removed. One student, after making a word with the stencils and feeling proud/inspired wanted to write another animal word in their own handwriting onto their paper. Another drew mini letters around their animal. The teachers chose to use the individual stencils for this activity.



Figure 27. Student Group C Stencil Activity

- 4) Student group D: ages 5-6. This classroom was split up into two groups (one group on tablets). This allowed focused time with students. This activity was a freestyle approach where students were given the stencils and blank pieces of construction paper and crayons/markers. They were left to explore and only needed teacher help if they were looking for a specific letter. Some chose to do the “Osage alphabet” and raced to get all the letters on one page. The others chose to write words that they were learning that week. The students had an easy time writing the letters, but it took a little time to find what they were looking for if they were looking for a specific letter. Some chose to fill in the letters with color directly in the stencil, others chose to outline the letter first with the stencil then color in the letter after the stencil was removed. There was an element of competition and comparison of finished letters and the amount of time one completed their page. Some students were more receptive than others. One student did not participate and went on the iPad. The teachers chose to use the individual stencils for this activity.



Figure 28. Student Group D Stencil Activity

- 5) Student group E: ages 6-12. This classroom was very engaged with this activity once students saw other students participating. This activity was structured. The students were learning weather words in Osage, so each student created their own book of drawings and words. The teacher assisted some students with finding the letters on the stencils. Other students were able to act as “helpers” and help the younger students use the stencils. The teacher chose to use both the individual and full sheet stencils for this activity. Students wanted to use the smaller 1-inch “all-in-one” stencil because it was “faster” but there was only one to share so it provided some impatience and competition for use. They also wanted to use the smaller 1-inch stencil because they were able to fit the longer words onto their sheets, their sheets were half-page size (8.5-inch by 5.5-inch). Some chose not to color in their letters, and one used a pencil instead. This was because it took “too much time” to fill in with color and others were just racing with each other to see who could finish first. Also, since this was a night class, students were ready to play and/or go home.



Figure 29. Student Group E Stencil Activity Photo 1



Figure 30. Student Group E Stencil Activity Photo 2

- 6) Student group F: High School students. This activity was a structured approach where students were focused on making signs of vocabulary words for the Osage classroom. The students were given the large and medium individual stencils and a large poster

board material to create the signs. The students were scared to start at first expressing that they didn't want to mess up or didn't want it to look dumb. After they started, they took their time and got rulers out to help align their letters so that they could be "perfect". The students utilized the whole hour class period to make one sign and did not finish the sign. Vocabulary words were being practiced and spoken during the activity.

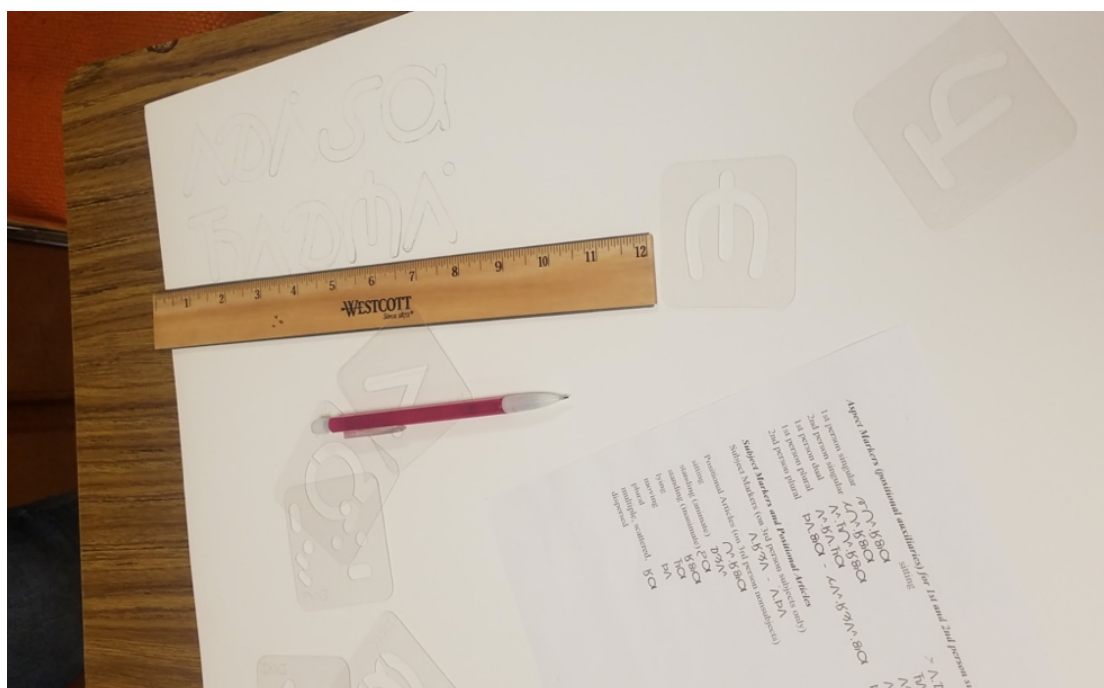


Figure 31. Student Group F Stencil Activity

- 7) Student group G: ages 6-17. This classroom was very engaged with this activity from the beginning. This activity was structured. The students were learning weather words in Osage, so each student worked to create their own illustrations with the Osage word written with the stencils. All the stencils were put on top of a table and students shared. The teacher assisted some students with finding the letters on the stencils and on the table. Other students were able to act as "helpers" and help the younger students use the stencils. It was harder to find some of the letters like "c" and "l"

because they were upside down and the wayfinding mark wasn't very visible. The older students colored in the spaces between the spaces of the individual letterforms that the stencil created to “make them complete” – see example below. The teacher chose to use both the individual stencils for this activity.



Figure 32. Student Group G Stencil Activity

- 8) Student group H: age 18+ Osage teachers in training (student teachers). The student teachers in this group were each given their own stencil sets (small all-in-one stencil, medium individual stencils, large individual stencils). They were given different tasks



Figure 34. Student Group H (Student Teachers) Stencil Use Photo 2



Figure 35. Student Group H (Student Teachers) Stencil Use Photo 3

- b) The classroom doors were decorated with Osage words using dry erase markers.



Figure 36. Student Group H (Student Teachers) Stencil Use Photo 4

- c) Words were written onto activity sheets for the younger children to display and take home.

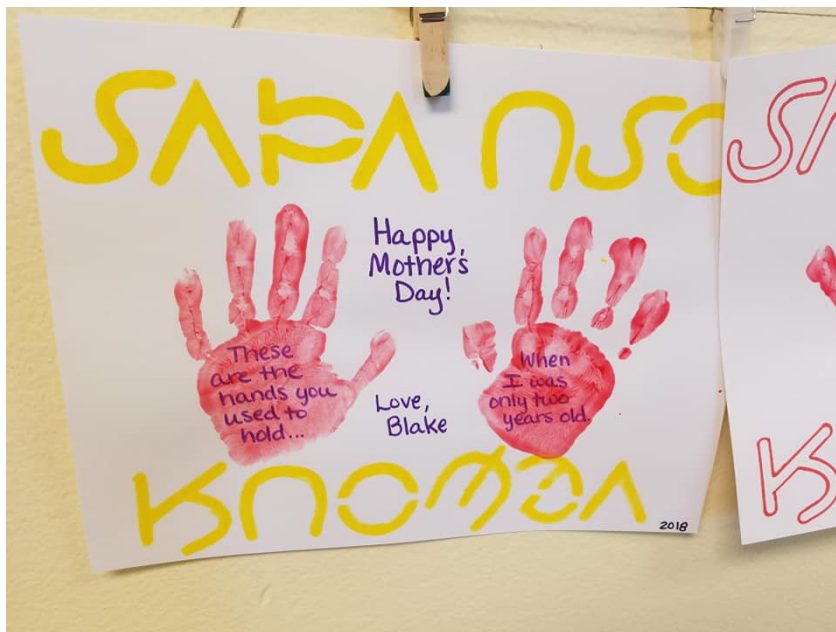


Figure 37. Student Group H (Student Teachers) Stencil Use Photo 5



Figure 38. Student Group H (Student Teachers) Stencil Use Photo 6

- d) Osage words were used for the different colors on the wall.



Figure 39. Student Group H (Student Teachers) Stencil Use Photo 7

- e) Osage words were used for the different shapes on the wall.



Figure 40. Student Group H (Student Teachers) Stencil Use Photo 8

Themes

During semi-structured interviews, the Osage language teacher participants described their perceptions and experiences with Osage language student participants and the stencils. They also discussed their use of the stencils to improve student success in the Osage language classrooms. During the naturalistic observations of the Osage language students in the Osage language classrooms, students engaged in various activities that yielded the use of the stencils as learning aids. Overall, five main themes emerged from the data:

1. All teachers conveyed the value of innovative experiences to effectively teach the Osage language and letterforms.
2. All teachers expressed that teaching the orthography to early learning ages is different from teaching adults.
3. The use of stencils provides a boost in self-esteem and confidence.
4. The majority of teachers indicated the use of sight words in the Osage orthography as beneficial.
5. Time and resources are challenges to teaching the Osage language.

While the themes are reported as being discrete, there is considerable overlap among them. Further, participant's responses to interview questions often addressed more than one theme. In those cases, the interview data are described where they appear to fit most logically.

Theme 1: All Teachers Expressed the Value of Innovative Experiences to Effectively Teach the Osage Language and Letterforms

The primary finding of this study is that the teachers expressed the need to create experiences through innovative learning. This finding is highly significant as every teacher stated that creating an experience is important to their process of teaching the Osage language and the Osage orthography. This relates to how the students learn the shapes of the Osage letterforms and how they learn the Osage language. There were many different but related examples of interactive activities described in the data such as art projects, games, and language fair activities. One teacher commented: “If you can create an experience that requires them to use the language – that will stay with them longer because there’s something that you can relate to it” (Teacher A). Another teacher said, “Their attention spans 10 minutes, a high school kid, 15 minutes., each day you got to keep it innovative for them in order to learn” (Teacher C). Other teachers talked specifically about using the stencils to create art:

And with the stencils now that’s a great learning tool to where they can not only learn the symbols, but they are learning a little bit of art as well. You can kind of bring out what their creativity is, you know, what words do they want to say, you know, what they are thinking about that day...It’s a good learning tool. I know these stencils are going to really benefit them to learning the symbols. (Teacher C)

Another teacher talked about creating art projects with the stencils. This statement recognized the stencils being valuable but not knowing how to use them in a variety of activities to expand their lessons:

When it comes to teaching children who speak English, how to speak Osage, unless you’re doing some kind of art project, they’re not into them. I found that it

[the stencils] is a valuable tool but I didn't know how to like bridge it to make it more flexible to use because they're more visual at that age. (Teacher B)

They need more like something that moves and can roar, you know, uh, because that's exciting to them. The more they are excited, the more they hold onto it. Just the littlest things I didn't realize they would remember. (Teacher B)

In a related remark, it was explained that an activity needs instruction in order to be effective:

When I first introduced them [the stencils] I was just like – all right here they are, just get a feel for them and use them – and they did like it but it wasn't as effective as when I said – here is a word, look for that stencil and make this word.

(Teacher A)

Games was a primary activity that was described as key in delivering lessons.

Teachers expressed this connection in the following ways:

If you can take it and you can turn it into a game, they're more engaged. Um, if you don't know how to turn it into a game, it better be really interesting.

Otherwise, they're going to be watching their phones all day and that's frustrating. (Teacher B)

Right now, we can do games with them. It's really good that we have numerous stencil sets now so we can do race games, you know, say a word and they start using the stencils and you know put that word on a paper, they love games, kids love games and we can create more games with them. (Teacher C)

It was easier to teach them games versus giving them white papers and going over worksheets and doing that type of teaching, having them look at pictures and repeat after me type things. (Teacher D)

Teacher E expressed that they tried to introduce a memory game in the past and it didn't really stick with the students, but since having introduced the stencils in the classrooms, the stencils are a great tool that helps them write the words which leads to stronger recognition.

Additionally, the language fair, an annual event that all students participate and compete in, was brought up as the most successful event in relation to activities/projects that students are invested in and yield the most results in motivation to learn the Osage language. "The most successful usually is with the language fair stuff... you'll see like immediate results when we work with them on the language fair things" (Teacher A). The language fair "things" include the 11"x17" posters that sparked the initial use of the stencils in the informal pilot study and the continued need for additional size stencils.

In addition to activities, it was interesting to learn that the games and artwork lend to other things that are important in speaking the language appropriately:

I'm very fortunate with these symbols and the stencils and you know, I know we're going to go far with them with games and artwork and not only like art but also, you know, they're going to be learning how to speak appropriately. (Teacher C)

Additionally, Teacher E expressed that the adult students really enjoyed the stencils, "they loved it because it makes it easier for them to write it and makes it more legible".

Theme 2: All Teachers Expressed that Teaching the Orthography to Early Learning Ages is Different from Teaching Adults

This finding is related to the role of the Osage orthography in the experience of learning Osage. Most of the teachers expressed that teaching the orthography to early learning ages is different from teaching adults. The adult students are learning orthography first then speaking, and children students are learning to speak first then learning the orthography. Children just listening and talking are the best learners, as stated by Teacher A:

Teaching the children, just listening and talking, they are the learners you really want to target because they could pick up the language, you know, they can get past all these different stages we're trying to create for adults. They go straight to talking and those are the best learners right there. (Teacher A)

One of the big things they want you to do is they want you to learn how to read and write, because they say once you learn to do that, you'll be able to read it and able to write it...in a way they kind of teach language backwards from how you actually learn language. (Teacher B)

Teacher A mentions, "For adults, I feel like it's different because a lot of adults want to read first and then, you know from there they'll learn how to say words and things like that...In my adult classes, they will feel way more confident whenever they know the symbol sounds, it'll boost their confidence a lot".

With the kids, they're telling us don't introduce the orthography to them yet. Just let them hear the language and learn first and then we'll teach them how to read and write later because it's more of a natural approach. (Teacher A)

“The little kids when they learn the orthography, they’re not too invested in it as they get whenever I’m teaching them words, like when we sit down and do orthography and writing lessons, they’ll do it, but it’s like they don’t grasp it as well as whenever I teach them how to say a simple sentence.” (Teacher A)

Theme 3: The Use of the Stencils Provides a Boost in Self-esteem and Confidence

The teacher’s reported their own key observations and meaningful interactions resulting from the use of the stencils. This included the use of stencils providing a boost in self-esteem and confidence. The most unexpected of the findings was that the teachers in training (student group H) were more comfortable in writing the orthography after use of the stencils in creating student projects and classroom materials. This relates to the effect the use of stencils has on the student experience of learning Osage. Here are some examples:

I never felt like writing or implementing the language on their activities or writing it on there until they got the APP and the stencils. So, like for Mother’s Day and a couple of other arts and crafts stuff, they never really wanted to write it before because they didn’t want to be judged on “did I write it correctly, am I saying it correctly, did I spell it correctly?” Whereas now they can refer back to the APP to see how to spell it and then they can use the stencils to write it on whatever. And like you saw my teacher’s rooms, they put greetings on the windows using the stencils and then with the smaller set of orthography they started using those more with, um, with their crafts that they did for the kids. Like for Mother’s Day...they wrote INA on there ...it also made them a little more comfortable with just writing it themselves. (Teacher D)

My teachers started free handing it and writing it more after they've used the stencils, so I guess it's a good practice, I mean, I guess whenever well with my three- and four-year-olds, they're tracing letters all day and so for my teachers they traced orthography a lot using the stencils, so now they're more comfortable with writing it freely without using stencils. (Teacher D)

They always struggled with the writing part. With the use of the stencils, they are able to navigate the stencils, use the correct symbols and I felt like they had a better flow. And with my teachers, I can see them understanding those characters better, you know, before, um, it was a little difficult. They had some struggles. We go through it. They learned the orthography, but they were still struggling with writing it. And so, it made them very standoffish to, to write it or to use it in their classrooms like that. They always wanted me to create whatever it was and print it for them. (Teacher E)



Figure 41. Tree (Zah[^]) Example

I had one teacher, she had all the kids draw a tree and then she used the pencil and went and write the word Zha[^] for tree underneath each one of the kids

pictures, and so when their parents came in, you know, a couple of the parents asked the teacher what is this? And they said that says tree in Osage, Zha^...and so it opened up a line of communication for the teacher and for the parents to ask questions of the teachers. And the teachers have the confidence to share with them their knowledge. (Teacher E)

Confidence is also related to teaching approaches. One teacher mentioned that they were not real comfortable coming up with activities at first until they could see possibilities, “My creativity was kind of limited... the more I saw what things that I could do with it [the stencils], the more ideas I got, which led to the book.” (Teacher B).

It was also mentioned that along with confidence, fine motor skills were developed:

One girl, she was all about it, she really figured out they're all different shapes, so she had them all over her paper. She didn't fill them in real good, she just kind of put her crayon in it and followed it and kind of traced it so you know, doing art but trying to train some fine motor skills at the same time. (Teacher B)

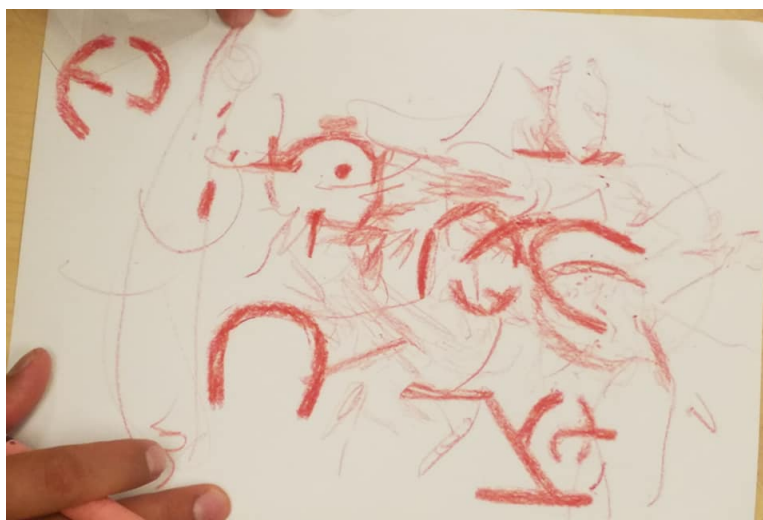


Figure 42. Orthography as shapes/art.

In addition, the observations are directly tied to activities where students were proud of the work they produced in various activities.

Theme 4: The Majority of Teachers Indicated the Use of Sight Words in the Osage Orthography as Beneficial

This concept is connected to the idea and use of sight words in the Osage orthography being new and beneficial and the idea of exposure to the Osage orthography is expressed as the orthography is presented on materials within the classroom. Sight words are words that have to be memorized, by sight, so that they can be recognized immediately, and students can read them without having to use decoding skills (What Are Sight Words, 2021).

Teachers talked about sight words in Osage orthography being new and beneficial, “We never really had some like hands-on materials that could teach that. So that’s why I was kind of really excited about it” (Teacher A).

When they’re four getting ready to go into kindergarten, they start teaching something called sight words. So, in that you can really kind of try to create sight words in Osage and that’s hard to do. I don’t think anybody’s done it before now, I don’t think anybody’s tried to attempt it. So, this is kind of groundbreaking level stuff. Like these stencils is something that we’ve never had. (Teacher B)

An interesting observation of the classroom was that when seeing the orthography shapes and using sight words in the classroom makes the language come alive and gives it a physical and visual presence (as opposed to hearing the language). This leads to the idea of exposure. There was mention of exposure to the orthography being important in the younger students’ classrooms.

I didn't really know what to do with the stencils with you know, those babies. So, I just kind of let them play with them. Let them color in them. They kind of get familiar with it, you know, and plus it's all over their walls so that you see it now, so I kind of, I hope they kind of grow from there. It will, they will. (Teacher B)

The infant-two-year-old room, at that age, it is mostly exposure. The more exposure the better they are prepared. They don't even know what the alphabet is, but they can sing a, b, c, d, e f, g... They can! They don't know what it is though. So, it is all about exposure. (Teacher B)

Additionally, students started recognizing words written/drawn in the orthography on classroom materials and resources when they were not explicitly being taught to them. In one classroom, Teacher D described this experience:

I put the symbol or object on the card but also have it labeled in Osage on there so the language was there visible...I didn't have them write it but towards the end of our class, I did have a few students that were starting to recognize the symbols and put the symbols together and they were starting to be able to read the cards. (Teacher D)

That wasn't one of our tools in general – teaching the orthography...A couple of kids started recognizing different words that were on the walls. So, they started tracing out and making their own pictures and using the orthography that way and stencil them that way and kind of almost freestyle them. (Teacher D)

Theme 5: Time and Resources are Challenges to Teaching the Osage Language

Teachers explained that in order to handle the different classes and different levels of learners, the amount of work they put in and the expectations they have for teaching

the language can be challenging. This finding is important because it helps illustrate the need for additional teaching resources to further enhance Osage student learning.

A few teachers described challenges with time:

Our children's class would only happen like once a week, um, mainly that's how it is with all of our classes. We have one class time a week times 32, so they're only really getting maybe 32 hours of class time. Um, then, when they come back, we review, review, review, and then when they start yelling it out, we know they've learned it. Probably, maybe a couple weeks, you know. If they were to have it every day, it'd probably take them like a couple days before they learn it.
(Teacher A)

The community children's class there's no real commitment with it. So, you never really know who's coming in that day...you got some people who are consistent, you developed a teacher to student relationship with them and then there's people who come in and they don't know anything and you want to be able to accommodate them and continue teaching your others but it creates difficulty there. (Teacher B)

Another mentioned attendance being a hindrance, “The attendance of the kids kind of hindered what all I would teach because some days we’d have like 10, 12 kids and some days I’d have like two” (Teacher D). Some other challenges are the lack of resources which include having to create a way for themselves in teaching:

In beginner one, there's 150 words that are taught out of the whole book but the way how they're given, there's no real exercise. So, I have to create the exercise.

It's almost kind of like trying to create your own immersion, but you can't just do full immersion. (Teacher B)

We kind of just want to teach our Osage language, but we had to learn all this process in order to teach our language and we also are learning our computer skills. We're learning software's, technology, different ways to present it to our learners. (Teacher C)

When I started working here and my job became teaching Osage culture and language to our teachers, I was just like, oh, okay, sure I could do this. And then I realized there's no structure for it...I didn't have a book or anything to follow. So, I had to really look at how I was going to do this. (Teacher E).

Some of these challenges occur when thinking about the approach to teaching children. "With children, I've kind of almost had to relearn how to talk to them... talking to an early learning age, you really have to explain things different" (Teacher B). Furthermore, teachers expressed that it takes time to see results. There were some experiences where students displayed delayed learning as well.

It takes five to 10 years to really learn a language. It took the Hawaiians; I think like 20 years to bring back their language. So, we're on a good path, you know, like we, our sites' been in existence for 10 years, so we're halfway there. It might not seem like we're accomplishing anything, but we are, we are competent, we are accomplishing a lot. (Teacher C)

Like you won't know that they've been picking up stuff until, like later because a lot of the language is contextual. So, sometimes you have to wait for a moment

where they can use the things that they've learned and so it might be down the line that they learn, or they use it finally. (Teacher A)

I honestly don't know if they're learning anything from me. They said it might not look like they're learning anything now, but those three-year olds are going to grow up and, you know, you'll be surprised on what they remember. (Teacher B)

Other challenges include relating visual to real life applications, students remember a visual if it is repeated but that doesn't mean they will know the person/place/thing in real life.

If it's repetitive, they'll pick it up. I know the two-year olds they watch an animal PowerPoint like almost every day, and they pick it up and they know those animals, they'll say it, but sometimes if it's not in the PowerPoint, like if it's in real life, like I'm sitting there with an animal, sometimes they won't know what it is. So, they'll know it in the PowerPoint, but when they see it like in real life, sometimes they struggle with that. I don't know if it's just they're anticipating the order of it [the PowerPoint slides] and they just know it in that setting, but when you take them away from it, they don't know it. (Teacher A)

Stencil Feedback

The following data was pulled together to inform the design of the stencils and suggestions for improvements. It also provides information for new resource development. These suggestions were used to carry forth changes that will be implemented in future stencil designs and to provide for new recommendations that is presented in Chapter VI: Conclusions and Recommendations.

General Feedback on the Size and Use of the Stencils

<ul style="list-style-type: none"> I use them for just making signs or where I want the letters to, I guess look a little neater
<ul style="list-style-type: none"> If you were doing a small poster or if you were making the classroom rules and you're putting it on a poster, they are perfect size. If you're doing like a big billboard or something you would want to just print them. If they were any smaller, it might as well be writing
<ul style="list-style-type: none"> Least effective if the learner doesn't want to use them
<ul style="list-style-type: none"> I think if all the teachers get together, we can probably come up with more, more ideas
<ul style="list-style-type: none"> Teachers can work on planning out layouts with younger students. We had a smaller piece of paper and they didn't realize that they needed to scoot the stencil down to where they just drew the symbol before, so they were just using it as blocks and so they were running off the table – and so I showed them – that's not a step that I didn't think about
<ul style="list-style-type: none"> We have magnet sheets so my teachers were like, oh, we can put, trace the stencils on there and cut out so we don't have to keep writing

Stencil Likes

<ul style="list-style-type: none"> The size was really good
<ul style="list-style-type: none"> I like that the ribbon work symbol was up in the top corner
<ul style="list-style-type: none"> Personally [as a teacher] I didn't have any problems determining what symbol was what, but I'm also really familiar with this

<ul style="list-style-type: none"> • I thought the order was fine. There's never been a definite determined order.
<ul style="list-style-type: none"> • They're a good size. I liked them
<ul style="list-style-type: none"> • The biggest size we had; it works but for it to really stand out it'd be probably be best if it was bigger – like two symbols on one sheet of paper size. We could do those on the computer with the orthography but if we wanted to make more of a handmade type deal for instance we're implementing, will be implementing the Reggio Emilia philosophy into our site
<ul style="list-style-type: none"> • Everyone's handwriting is different. So, like you've got some kids that have like maybe sloppier handwriting than somebody else. So, whereas if they use the stencils, everything's more uniform in that sense. And, um, it wasn't a barrier for any of the kids to write one of the symbols, they were able to just trace it out and use it as it needed to be
<ul style="list-style-type: none"> • I wrote down some words on a white board and had the students search for the different symbols and write out the words with stencils, and they really liked that. Every day I go up there, they'll ask "are we going to use the stencils today, are we going to do that activity?". So, they really liked it
<ul style="list-style-type: none"> • I used to have them, just write them on their own because we have orthography sheets that I would just give them and they would write it, but they really, they liked the stencils a lot better

- Loved the materials that you made them out of, it's flexible and not destructive. I've had several ages use these and so they're not too flimsy but yet they're not too where somebody is going to get hurt with them because you always got to think of all of that

Stencil Design Improvement

- Thicker material or different types of materials – because the plastic materials they were playing with them and almost broke one of them because they were twisted in the middle of it
- The only letters that were kind of hard to tell were the “SH blend” and the “CH” blend, those are the only ones that I noticed that the kid's kind of had difficulty seeing which way it goes
- On your big one, your one-piece. I don't know if I would have put all the diacritics on there because when I was working with them, they all thought that all of those belong there...they would want to fill in all the little dots and all the lines
- Maybe like a corner where it would have been diacritics if I was going to use them...that way they do just the letter and then I could go in and teach them what diacritics are and how to incorporate those into your writing
- Individual letters are better for understanding in younger children Full sheet is better for usability in kindergarten ages

<ul style="list-style-type: none"> • Maybe the width of them, they're kind of wide, they are good for coloring in but for something quick, especially in games we need something for quick writing
<ul style="list-style-type: none"> • Maybe make the key a little bigger or maybe more identifiable to them coming in. The kids really didn't comprehend the key as to which way the stencil needed to be turned, because of the age group, when they see a stencil, they're going to trace it, they're not going to look for the correct way
<ul style="list-style-type: none"> • They would be used probably maybe more if they are scaled down like a little smaller than what they, what they were
<ul style="list-style-type: none"> • It'd be really nice to have like maybe three on a little, on a sheet or whatever. And so that they didn't have to like search for so many or if they were turned the incorrect way, they're already turned that way...so we don't have to hunt and search. We are just able to narrow down the search a little easier
<ul style="list-style-type: none"> • Maybe all the blends together like "TH" and the "TS" and things like that are the ones that kind of had more of the blends together ...the "CS" sound, the "C" looking symbol land the "PB" and like those ones that are more single sounds
<ul style="list-style-type: none"> • Making them smaller, where it would be like more of a single line...just not as wide, maybe not bubble letter

Suggestions for New Tools

<ul style="list-style-type: none"> • A variety of materials of the stencils: little stamps or magnetic ones
<ul style="list-style-type: none"> • A little box of letters and you stack them and make little patterns. Tools like that to be able to teach somebody how to read
<ul style="list-style-type: none"> • I actually would like a really big size like if you ever see the stencils over there at the Pawhuska office on the side of the wall, that size because with our camp I wanted that to be able to paint on the side of the building and use something so the whole town can see them, but I just have to freehand that or something
<ul style="list-style-type: none"> • New activity for outside – picking up sticks outside and breaking them down to make the letters of the alphabet
<ul style="list-style-type: none"> • Magnets – for use with the kinetic sand
<ul style="list-style-type: none"> • Posters – more created with stencils
<ul style="list-style-type: none"> • Little magnet sets to put on your refrigerator
<ul style="list-style-type: none"> • Learning sheets to follow for the orthography so they can practice writing. Somewhat like when you practice the alphabet in 1st grade to follow and draw the letter. We can certainly use sheets to teach the little guys the orthography. Currently, the small students do not use the orthography they are learning the language by just hearing and saying it. We do TPR Total Physical Response method where we demonstrate, and they learn. But it is good to start teaching them the orthography now and these learning tools are so beneficial to teach them the orthography.

- A word stencil set – with words that you see everywhere – about 20 words or so that would already be in line, like in a stamp sort of but use it as stencils

Suggestions for Use (Intermittent and Ages)

- We don't use them like every day, which I think is good because if you're using them every day, they probably get tired of them, but as it is, right now, they love to use them
- I had made my own flashcards, laminated them, and they're Osage orthography. So, I go through with the sounds, and we make the sounds and such. And you can't do it too often because, boy four-year olds will tell you that they don't want to do it
- Probably use more with the older kids
- Recommend older ages 6-12 – we did have older kids, so they were able to pick up things and recognize things a little faster I feel than my younger ones just because they're still at the baseline of learning English language and recognizing that picture or whatever you want to call that as that sound
- Also, with the older ones, we can do more activities with them, even using them on a dry erase board or whatever

- I used the stencils on our little old fashioned, little projector (laughs) and that's my only way I was able to enlarge it

The Main Language Tools They Currently Use

<ul style="list-style-type: none"> • Flash cards
<ul style="list-style-type: none"> • The [Osage language] APP
<ul style="list-style-type: none"> • The [Osage language] APP is really helpful, and their families tell me that too, they're like, we use this app like every night at dinner and we'll do these words right here and they learn it.
<ul style="list-style-type: none"> • In the two-year-old classroom I have little counting tools. They have different little animals and they count and stuff.
<ul style="list-style-type: none"> • The other is orthography sheets that I use for the kindergarten, I just introduce one or two layers at a time, and they'll write them, it's like four pages. They'll write it and then on the second page it'll be a huge symbol that they color in and then on the third page it will be the word that they're learning
<ul style="list-style-type: none"> • Other: for the newspaper I make word games like crossword puzzles and word searches and stuff, and they have a generator
<ul style="list-style-type: none"> • PowerPoints and videos
<ul style="list-style-type: none"> • Interactive games – Pictionary game, Simon says activity

New Resource Ideas

The interviews asked for ideas for new resources. The following are ideas that were generated from the data and are informed by the observations:

<ul style="list-style-type: none"> • A workbook type of thing where the symbols they're like dotted line letters... something like that would be nice where they can trace it and learn how to write it
<ul style="list-style-type: none"> • A workbook style thing with like a search and find, find the symbol
<ul style="list-style-type: none"> • The two-year olds could definitely use puppets or unique puppets – like Osage man puppets, Osage women puppets for a conversational based instruction
<ul style="list-style-type: none"> • Little paper dolls for the kindergartners. For learning like other than language itself, just learning about the culture, I think they need that too. Learning how, how we are unique in the way we look and dress and things like that. Like you could show them culture and use it to do language activities
<ul style="list-style-type: none"> • That might be cool to be able to have like and actual scrabble
<ul style="list-style-type: none"> • Make us up a cartoon character that's going to talk Osage, cause them kids are going to love it! Have it come out "Ha.we!" because those kids just like smile and you can see they love it and they're intrigued and then they're looking at the character but they don't realize they're learning Osage
<ul style="list-style-type: none"> • More videos
<ul style="list-style-type: none"> • Book like "see spot run"

- | |
|--|
| <ul style="list-style-type: none"> • APP Elompa goes to school. For teenagers for their world – playing ball or practicing. I’m going to school or get ready for college, bringing those concepts in for them to understand it. Adults, go to work |
| <ul style="list-style-type: none"> • Games or anything to encourage learning about our culture and language |
| <ul style="list-style-type: none"> • Paper dolls – like the Navajos, they have a little paper doll that they have and they have the different clothing you can put on them and the little hair braid or the wrap – if we had Osage specific that would be really great and would help...especially when we go over clothing in the classroom, that’s always a big topic |

Conclusions

This chapter illustrated the variety of stencil use and Osage student learning experiences and Osage teacher teaching experiences. Various ways on how students and teachers used the stencils were shown through the many activities that were experienced.

It displays the importance of viewing the orthography in the classrooms. This relates back to the idea of letterforms and identity and presenting/developing/using unique writing systems. This also gives another example(s) of approaches to letter learning, as not only were the stencils used in activities, the stencils and their use sparked many other new ideas, related and otherwise, for new resource ideas.

Furthermore, there is a connection to Piaget’s State Theory which is exemplified through the students using the stencils to construct knowledge through experiences. In this case, students who used the stencils in various activities gave a boost to self-esteem

and confidence which carries into the Vygotsky's Sociocultural Theory and individual development.

Throughout each activity that was observed there a significant role of haptic learning which allowed the use of learning by touch. When looking at dual code theory and visuo-haptics, the level of cognition of using the Osage orthography stencils to create letterforms, sounding the letters sounds out, and visually seeing the letters being traced and put onto a creative piece of work reinforced the engagement of language learners which enabled the children to an increased performance on knowledge.

All these findings are significant as it comes to the role of resources and the experience of learning Osage. In the next chapter I will further analyze and discuss the impact these findings have while also providing recommendations for stencil improvements and new resources.

Analysis, Interpretation, and Synthesis of Findings

The purpose of this study was to understand the specific needs and ideal sizes for the different uses of the Osage orthography stencils within the beginning level Osage language classrooms and to further design and develop these tools to allow for the best learning advantages and outcomes. The goal was to provide the Osage orthography stencils to the teachers at the Osage Nation language department and to learn about the relationship between learning/teaching a unique orthography and how designed materials such as the Osage orthography stencils could make a difference. It was hoped that a better understanding of these interactions would provide a base of knowledge that designers, researchers, and teachers could use to carry out further work with the design and development of more language stencils and prompt other ideas for related material use in the classroom.

This research used naturalistic inquiry to collect qualitative data by conducting observations and semi-structured interviews. Participants in the study included five teachers and 48 students. The data were coded, analyzed, and organized according to the research questions and then guided by the conceptual framework, as depicted in Chapter III: Methodology. The study was based on the following four research questions:

1. What is the role of the Osage orthography in the experience of learning Osage?
2. How do students interact with and learn the shapes of the Osage letterforms?
Do the Osage orthography stencils provide help?
3. What effect does the use of the Osage orthography stencils have on the experience of learning Osage?

4. What designed resources or teaching aids do teachers need to further enhance Osage student learning?

The analytic categories of this research are aligned with these research questions. Theory and issues raised by the literature are also tied into the interpretations. The purpose of this chapter is to synthesize the findings and provide a look into their meaning. This will integrate a new level of understanding that will lead to the study's conclusions and recommendations.

Acknowledging the need for new learning aids in the Osage language classrooms is a first step toward ensuring the future of Osage speakers. This may expand the span of efforts of the Osage language department. To achieve this goal, proponents of the Osage language department in general must find ways to effectively confront questions about how this program should be structured with short- and long-term goals and therefore, what the teaching resources should encompass. Most importantly, it will be most effective to show that there is a need for teaching resources that help learn the Osage orthography and the inclusion of visual representations of the Osage language in the classroom.

Analytic Categories

The overriding finding in this study revealed that students learn the shapes of the Osage letterforms and the Osage language itself differently dependent on demographics, time, and resources available to the Osage language classrooms. Additionally, the different stencils sizes all served different age groups in different ways. The Osage orthography stencils provided a level of confidence in the students at all ages and the

Osage orthography stencils provided new avenues of creativity for resources in the classrooms and within classroom activities.

The following are significant areas of importance from the observed stencil activities and field notes. These categories help to provide an outline into the analytic categories that follow.

1. Visual – *Seeing* the orthography shapes and using sight words in the classroom makes the language come alive and gives it a physical and visual presence (as opposed to hearing the language).
2. Exposure – Introducing or exposing to the letterforms rather than teaching.
3. Implementing by themselves/ having confidence – teachers produced more classroom materials; students gave more effort to write themselves. Students often had a written guide to spell a word and a side activity of “find and seek” the letterforms ensued. Creativity was increased.
4. Group Sharing vs Individual Use – Promoted sharing of stencil template. Younger students were helped by older students in mixed classrooms. Teachers provided guidance in all classrooms. Sharing of stencils were encouraged with the full stencil. With the individual letterform stencils, students waited their turn but could use another stencil while they waited. Some chose not to. This indicated that there may be use of different sizes for different ages.

The Analytic Category 1 is named “Leveraging the Use of the Osage Orthography in the Classroom”. Analytic Category 1 speaks to Finding 4 “The majority of teacher indicated the use of sight words in the Osage orthography as beneficial”.

The Analytic Category 2 is named “Recognizing that Not All Osage Language Learners are the Same”. Analytic Category 2 speaks to Findings 2 “All teachers expressed that teaching the orthography to early learning ages is different from teaching adults” and Finding 5 “Time and resources are challenges to teaching the Osage language”.

The Analytic Category 3 is named “Reinforcing Joy, Confidence, and Infusing Creativity in the Classroom”. Analytic Category 3 speaks to Finding 1 “All teachers conveyed the value of innovative experiences to effectively teach the Osage language and letterforms” and Finding 3 “The use of stencils provides a boost in self-esteem and confidence”.

Analytic Category 1: Leveraging the Use of Osage Orthography in the Classroom

Based on the first research question, “What is the role of the Osage orthography in the experience of learning Osage?” I sought to answer a deeper connection that the Osage orthography has with the students. In Chapter II: Literature Review, I discussed the idea of identity being tied to visual language. Finding 4 “The majority of teachers indicated the use of sight words in the Osage orthography as beneficial” ties into this idea. Furthermore, it connects to the idea of learning vs. seeing the language.

Sight Words. Sight words are part of visual language learning. In early childhood learning, sight words provide a basis of literacy. According to Hayes (2016), “the sooner that children are exposed to sight words, the sooner that they will become familiar with them, and in turn they will be able to begin reading such words” (p.10).

In addition, “The ability to recognize lower-case letters (a, b, c, etc.) on sight is more important for reading... [it is] strongly recommended that you use the lower-case

letters to teach the letter sounds. Reading consists of taking the individual letter sounds and blending them together into whole words” (Case Wars: Upper vs. Lower Case Letters, 2016). In Osage, particularly the Osage orthography, there is no separate upper case and lower-case letter designs (yet). In the process of implementing the language into Unicode, both upper-case and lower-case letterforms were included if they were ever needed in the future, although the design of them were the same as the original forms with the only difference being the cap-height being decreased to create small caps (lowercase letterforms that resemble uppercase letters—often called small capitals). Therefore, the idea of sight words being used in the Osage language classroom becomes another important part of learning the letterforms and the letter sounds and ultimately whole words. The Osage orthography can provide that additional level of learning, as the idea of the dual code theory. Pairing visual and non-visual processing to engage language learners in providing visual and oral information for them to process is key to cognition. Sight words also provide confidence, which connects to Analytic Category 3.

Identity. In terms of identity, all groups that were observed showed that they recognized the stencils as being Osage. One of the youngest students exclaimed “Osage”! when the stencils were handed out. This level of recognition helped to provide the boost in self-esteem that was observed in the classrooms and spoken about during the interviews. The ability to be able to write Osage, confidently, in the classrooms to either create classroom materials or aid in the homework of the students, leads to the level of engagement of the students and ultimately those outside the classroom. It enables the language to be even more present and to be part of the Nation in a ground up approach.

Analytic Category 2: Recognizing that Not All Osage Language Learners are the Same

The second research question asked “How do students interact with and learn the shapes of the Osage letterforms? Do the Osage orthography stencils provide help?” and sought to look at the different methods and activities that the students learned the Osage letterforms in and to ultimately determine the usability of the stencils. This category is important because as a designer, it is my job to create these stencils to support the classroom activities to the best of my ability. To do that, it is a challenge to identify a single solution for the design of the stencils and furthermore, quantify an answer to the way students learn the Osage letterforms.

The results demonstrate that the students learn the Osage letterforms in a variety of ways and that there is not a clear-cut answer to how students interact with and learn the shapes of the Osage letterforms. This is because the Osage language students learn the letterforms through writing freehand and writing the Osage orthography is not explicitly taught until elementary school ages (5+). At the younger ages, Osage language classrooms are mostly focused on oral and immersion settings. They do, however, have printed materials on the walls and in classroom activities that contain the Osage orthography. In these early learning classes, teachers do the bulk of the writing to provide classroom materials to teach the sounds of the orthography and words when they interact with the Osage orthography. All other instances of the students learning the Osage language are strictly immersion style learning.

Currently, the small students do not use the orthography they are learning the language by just hearing and saying it. We do TPR Total Physical Response method where we demonstrate, and they learn. But it is good to start teaching

them the orthography now and these learning tools are so beneficial to teach them the orthography. (Teacher D)

In reflection of the stencil design, I learned that the different sizes and activities provided by the teachers changed based on the age group involved and the fine motor skills and/or other areas of growth that the different age groups were developing at the time. Further, it is dependent on the activity planned, time allowed, and resources available to the classroom. Different stencil sizes proved to benefit different age groups and allowed the students to perform differently in writing the letterforms on their own. Younger students are not taught to write the orthography, but with the stencils, the teachers started to realize that they could have their students start to write the letterforms at much earlier ages.

For the youngest students ages 0-2, the stencils provided them with hands-on haptic learning of the Osage orthography for the first time in their classrooms. Although, it cannot be determined at this point whether the stencils provided these younger students the ability to learn the letterforms, it did provide the exposure to the Osage orthography and introduced the use of working with the sense of touch, fine motor skills, and the role of haptic learning. The younger students were able to recognize that these stencils are “Osage” and “special” which gave a sense of understanding and willingness to play with. This paired with oratory repetition of letters and language in the immersion classroom and language nests provides a dual coding level of cognition, supplementing the dual code theory.

For ages 2-3, the attention span came into play and with the stencils there was a lot of frustration. Although, they did engage with the activities provided, it seemed like a different form of the letterforms would work best for that age.

For ages 3-4, the level of engagement with the stencils was the highest. Students at this age were very exploratory, could handle the stencils themselves and were extremely creative with producing work with them. It cannot be determined at this point whether the stencils provide the students the ability to learn the letterforms, but the connection to identifying and finding them quickly through the planned activities certainly helped. In addition, the student teacher group H, who were categorized as students learning from the more fluent teachers, were able to use the stencils to the best advantages to create and provide more visual resources or sight materials such as posters containing sight words that hung in their classrooms. This is significant because it allows the student teachers a more in-depth experience in learning to write the orthography through the stencils when creating such materials, whereas previously they only printed materials from the font on the computer and did not have the motivation. The stencils gave them another level of confidence, which is part of analytic category 2.

For ages 5-6 and elementary ages, the students were involved but there was less of a creative point of engagement. For this group and for the ages observed at ages 6-12, it seemed as if they were at a higher level of understanding and needed more advanced stencils to work with.

For the high school ages, the students learn the letterforms by writing them and use a lot of printed worksheets to copy from. In these groups, the stencils seemed to provide another level of writing for them and room for new activities to enhance the

overall experience of learning the Osage orthography. This group and these experiences are more defined by analytic category 3.

Analytic Category 3: Reinforcing Joy, Confidence, and Infusing Creativity in the Classroom

The third research question asked, “What effect does the use of stencils have on the experience of learning Osage?” and sought to determine the value of the stencils in the classroom and when used in classroom activities.

The students immediately took interest in the stencils and recognized them as Osage orthography letters that they use in their classroom activities each day. The younger students engaged in a variety of different activities and had different responses to the use of the stencils based on their age.

Taken from the photo observations, the following are key highlighted activities that connect to this analytic category.

1. One student was instantly engaged after shown how to make one letter with the stencil. The satisfaction of completing one was shown. (1-2 years old observation)
2. There was frustration with the stencils and the paint not automatically drying. This caused the letter to get smudged which made them upset. On the other hand, when lifting a stencil after putting paint on it and seeing the letter emerge, there was lots of joy and satisfaction in completing the task. (2 year olds observation)

3. One student, after making a word with the stencils, wanted to write another animal word in their own handwriting onto their paper. (3-4 year old observation)
4. There was a variety of ways the students colored in the stencil lettering including using single line strokes of colors made with crayons, using multiple colors to fill in the letters, and using multiple colors in one letter. Some chose to fill in the letters with color directly in the stencil, others chose to outline the letter first with the stencil then color in the letter after the stencil was removed. (3-4 year old observation)

Throughout each of these age groups and interactions that was observed, there was a significant role of haptic learning which allowed the use of learning by touch. When looking at dual code theory and visuo-haptics, the level of cognition of using the Osage orthography stencils to create letterforms, sounding the letters sounds out, and visually seeing the letters being traced and put onto a creative piece of work reinforced the engagement of language.

An additional level of creativity was observed throughout all groups: a sense of natural discovery and play. The younger students' exposure to the Osage orthography through the stencils provided them with joy and almost a sense of awe that they were able to write the orthography for the first time and write the same way in which they see in the posters, wall art, and the materials that the teachers provide. The older students showed an interest in the stencils that allowed them to also experience that sense of joy, but it also led to a competitive nature of play. In the ages 6-12 group, many were racing to be done first, spell a word first and quickly by using the stencils. This age group is the age where

writing is normally introduced so to have a tool like this to assist them in their handwriting removed barriers to different handwriting styles which enhanced productivity and overall engagement for most of the students interacting and drawing letterforms. This idea provides a connection to Vygotsky's Sociocultural Theory which is exemplified through the students using the stencils to construct knowledge through experiences. In this case, students who used the stencils in various activities gave a boost to self-esteem and confidence which carries into the individual development.

"Confidence can be defined as trust or reliance in oneself" (Sight Words, 2021). For ages 6-12, the stencils provided them with the most confidence to do their work and to work in a more determined attitude.

The other key group that this category reached out to is the student teachers. This was a surprising part on my end as I did not know that the student teachers would be one of the most prominent groups to benefit from the Osage orthography stencils. The stencils allowed the student teachers to be more consistent with their own visuals and provided them with the confidence to do so more often. Before, it was mentioned that they did not enjoy writing the letterforms to create classroom materials because of a low confidence level in their own handwriting and constant second guessing themselves with making sure they were correctly drawing the letterforms right. They often used the Osage orthography mobile app to check their letter orientation and forms so with the stencils, it took away that barrier. When I interviewed the (master) teachers who observed over the student teacher classrooms, there was an overwhelming increase of classroom materials made with the stencils provided. This was because of the confidence, and it also allowed them to be more creative with the content that they created. For example, Figure 43

shows one teacher used the stencils to write on the door glass window a “word of the week” for their class, something that they were never able to do before.



Figure 43. Stencil use example on glass door window to the classroom.

Designed Resources for the Osage Language Classroom

The fourth research question asked, “What designed resources or teaching aids do teachers need to further enhance Osage student learning.” The answer to this question is

forthcoming in the final chapter of recommendations. It was my intent to identify the strongest ideas from the teachers, given through interviews and the strongest observations of ideas from the classroom environment. These recommendations may be explored with further research and designed with ideas presented in this study.

Conclusions and Recommendations

The purpose of this study was to understand the specific needs and ideal sizes for the different uses of the Osage orthography stencils within the beginning level Osage language classrooms and to further design and develop these tools to allow for the best learning advantages and outcomes. The goal was to provide the Osage orthography stencils to the teachers at the Osage Nation language department and to learn about the relationship between learning/teaching a unique orthography and how designed materials such as the Osage orthography stencils could make a difference.

The results show a positive direction in support of new teaching resources being developed. Introducing the Osage orthography stencils to a classroom with limited teaching resources enhanced the beginning learners experience of learning Osage. Not only are the teachers able to introduce writing at an earlier age, but they are also able to use the stencils to create larger posters and classroom materials that they themselves create. The stencils provide more exposure to the Osage orthography as sight words and even sight letters as they become more present in the classroom environment.

Particularly, stencil designs aided in the experience of learning the Osage language. The results discover the ability stencils have in enhancing language learning. This addresses the power that orthographies have in terms of identity and empowerment and provides recommendations for future teaching resources to be designed and developed.

There were two ways in which the stencils were used in the classroom. First with the actual students and the activities they used them with, second with the teachers that were students and the materials that they created with the stencils. Both instances

provided different needs and sizes of stencils. Within the Osage language classroom students, additional needs ranged based on their ages. In my observations, I found an interesting connection to the teachers using the stencils more so to make classroom materials as opposed to the students using the stencils to learn the letterforms. This was because writing the Osage orthography isn't taught to early learning ages (0-4 years). It was also because of the lack of current resources available to the teachers and the limited creativity they had with what they have available to them.

The Osage Orthography as a Visual Resource

Throughout all my research and discussions with other people who study Native American language revitalization there was a common thread of discussion about reading a language versus speaking a language. According to Hinton (2002), "You have to hear and say words to learn them. The words you are going to learn should be recorded in your mind according to their sound, not according to a visual system." I've read this, over and over. Every time, I keep asking myself, what is the value then of a visual system of writing? Then, I saw it. Everywhere. All the above is true. Very true; but we are forgetting the value that visuals give us every day, and that is a balance. Visual language becomes important for identity in everyday life. Just like a power of an icon, orthographies can represent as such. Identity can then be determined as a language revitalization factor.

I have learned in this study that children grasp on to visual letterforms if they are allowed the creativity to work with them. The stencils explicitly enhanced joy and self-confidence in their overall learning and exposure to the Osage orthography. This is the value of a visual system of writing. Piaget's Stage Theory appeared in the experiences the

students had with the stencils to construct and expose them to a knowledge base. The stages that Piaget presents in his theory shows stages of similar age groups in an almost parallel to the age groups in this study. This is interesting because we can use these stages of cognitive learning as a guide to thinking about the presence of Osage orthography in the Osage classrooms as a visual resource and develop materials and other objects to coincide with Osage orthography learning such as the stencil activities. To be specific, the stencil activities helped with sensory curiosity during the Sensorimotor Stage (0-2 years) and the introduction of letterform/object cataloguing, exposure to the Osage letterforms; and symbolic thinking during the Preoperational Stage (2-7 years) as imagination and intuition are at high levels. In addition, students who used the stencils in various activities gave a boost to self-esteem and confidence which plays into Vygotsky's Sociocultural Theory that learning is a social process and culture is significant in learning defining individual development.

The stencils allowed for earlier interactions with the Osage orthography for the younger students which provided learning by touch, the dual code theory and visuo-haptics. The level of cognition of using the Osage orthography stencils to create letterforms, sounding the letters sounds out, and visually seeing the letters being traced is a fundamental part of an Osage student's letterform learning experience.

Osage Language Learners have Different Needs that Call for a Variety of Stencils and Learning Aids

An interesting thing that came out of this research was the recognition that not all language learners are the same. We all know this in a general sense, but we must take

into consideration how learners learn and why this influences the importance of resources that benefit all different types of learners.

For the use of stencils, the best benefit of learning the letterforms was at the ages 3-4 and above. For benefits tied to cultural and social identity of the Osage language/orthography, all ages 0+ may benefit from use/empowerment through letterforms and identity.

Design Matters

Stencils must be made in a variety of designs to meet all the needs for all ages and learning stages. The immediate need that resulted from this study was the need for new stencils to be designed for quick writing, single line stencils for letters instead of the bubble-like letters. There was also a need to design the stencils with the diacritics put separately to the side. Currently with the diacritics included within the letters as an optional fill in, it was confusing to younger students still learning the letterforms. It made them think that all the diacritics were supposed to be filled in for each specific letter it was paired with instead of knowing that they are optional.

There was also a need for the letterforms to be broken up into smaller groups but not into individual letters as they were provided. This meant that there was a need for grouping sound-like letterforms, letterform blends, and single sounds letterforms (Figure 45). This helped students that are of age to learn to write words more quickly by narrowing down the search. The “all-in-one” stencil was too overwhelming at times and the individual letterforms were too many to keep track of when searching for a specific letter which led to some frustration at times. In other times, however, it led to teamwork from other classmates.

Throughout my observations of the students learning the letterforms and through the interviews with teachers, some of the letterforms were more difficult to find quickly on the stencils provided. Particularly, there was trouble in more than one instance in finding the (sh) blend and the (ch) blend. Looking at the design and overviewing them with the teachers, the bridges that are placed in the stencil design may have caused them to be harder to identify. In the newest design of the stencils these issues are addressed (Figures 44 and 45).

Make Learning Fun

Enhancing mood makes information pleasurable and the brain flexible. Good mood improves the value of perceived rewards like the gratification of new knowledge, accomplishment, etc. There is an expressed need for innovation amongst the Osage language classrooms. The stencils provided a new way to approach learning the Osage orthography and with a collection of activities to share, and more classrooms to expand to, results and creativity are endless.

Recommendations

Recommendation for New Stencils

Additional stencils were revised and designed based on feedback and analysis.

They are the following:

1. Stencil in a thinner line for quick use of drawing letterform (Figure 45). To allow those to engage in completing words and sentences at a faster pace.

Recommended for ages 6+.

2. Stencil in grouped letterforms based on common use (Figure 46).

Stencil diacritics and punctuation were separated in both new versions.



Figure 44. Full stencil with thinner line for quick writing.



Figure 45. New stencils in grouped letterforms based on use.

Recommendations for Use of Stencils

- Use individual letterform stencils for younger ages 2, 3-4.
- Can use both the full stencil and individual letterforms for ages 5-6 but they may benefit from the new grouped letterforms the most.
- 1-inch letters worked best in smaller hands.
- All-in-one stencil with thinner lines and the grouped letterform stencils for the older 6-12 age group.
- All stencil sizes for teachers.
 - 2-inch letters for posters and larger classroom materials.
 - 1-inch letters for smaller posters and materials, doors, white board, and activities.
 - Larger sheet of letters could be used in all cases.
 - New stencils for learning and teaching.
 - Implement orthography throughout classroom materials, wall posters, doors, etc. for all ages. **Children are aware of what these visual letterforms are and recognize them as Osage. This leads to an identity at an early age.**
- Encourage stencil use for confidence.
- Encourage stencil use for creativity.

Three Recommendations for Further Learning Aids for Learning the Letterforms:

1. For ages 0-3 years, recommend using a form of the positive letterforms such as magnets, wood letters, etc. in a 2" size. Foam stamps in the letterforms, 2-inch letters with a handle to hold and use to steady the stamp.

2. Small magnets, 1-inch letters for smaller hands, thick and agile for moving and forming words.
3. Word stencils – a set of common word stencils.

Three Recommendations for Further Learning Aids for Learning Beyond the Letterforms:

1. Workbook with dotted line letters for tracing and writing to learn words.
2. Little paper dolls for learning about culture and language of the Osages.
3. Videos and/or animations that include a cartoon Osage character

Further Recommendations

Creativity leads to the design of new materials and allows for discussions to be had about possibilities for all language learners and learning styles. Through dialogue, teachers can share information, exchange perspectives, and challenge ideas. There is a need for new innovative ideas for learning the Osage language and the Osage letterforms.

Through interviews, it was apparent that these discussions do not happen across classrooms or departments. When there were discussions, ideas were rarely carried out or received lack of funding. To develop any ideas further, I recommended a workshop where these ideas can bloom. Invite designers and other people who can assist in the development and implementation of such ideas. Carry out them to completion and deliver.

Further Research

There are a few research topics that could spin off the knowledge gained from this study. A few are listed here:

- Can stencils improve the actual learning of the Osage letterforms? A longevity study in the future could be possible. Measures and outcomes may be based on other factors such as early childhood learning and linguistics. A control group may also provide a more focused outcome.
- What role does graphic design play in preserving language and culture? In language revitalization? What effects would play if a different typeface was used to develop the stencils? More material exploration and colored but still transparent stencils could provide even further categorization of sounds and developmental uses. Graphic design research or even graphic design considerations are often a variable that isn't included in the planning of resources that involve language maintenance or language revitalization. I was fortunate to observe the need as an American Indian and designer and question where I could help. Many tribes could hire designers to improve the legibility of their materials and design for them more resources they could use in the classrooms. Often though, this is a limitation because there is not a priority for design considerations.

Researcher Reflections

As I come to a closing of this study, I must reflect on the intention behind the undertaking of this research. It was my intention to provide a different perspective from a designer's lens on the experience of learning the letterforms of the Osage orthography. The Osage orthography has always played a key role in my life as a designer, and I appreciated the opportunity to plan and implement this study as a design researcher. I hope that the result of this study highlights the impact that design has on the development

of teaching resources and learning aids. The Osage orthography stencils provided each classroom with not only additional levels of exposure to the language, but it also provided a resource that enhanced the experience of learning the language. It is vital that the experience of learning a new language is memorable, fun, and useful. It is vital that the students feel a level of confidence when performing work. Stencils can provide that. More hands-on learning aids could provide that. Therefore, with any new development of a unique orthography or writing system, the more hands-on tools like stencils you have will help contribute toward teaching, learning, and saving languages.

When a language dies, part of the earth dies. Knowledge dies. I believe in my work and the importance that this work is delivering to the world. Language is important no matter where the origin is. It should never be lost. I am proud to have taken advantage of the opportunity to contribute toward teaching, learning, and saving languages.

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Appendix A

Follow-up Questions Pilot Study

Since the stencils were distributed to you and your classroom, I'd like to ask you some questions about how they have been received.

1. In what ways have you or your students used the stencils in the classroom?
 - a. Are there specific activities that the students use the stencils in?
 - b. Describe the process in which the students use them in _____ activity?
2. Is there anything that you would change about the design of them? Or how would you improve these stencils?
3. How many sets would be appropriate for each classroom?
4. What do you foresee being the next steps for improving these stencils?
5. Are there other interactive learning tools you think would be helpful to design and develop? Why?

Appendix B

Letters and Informed Consent Forms

Informational Letter to Teachers

Dear *name of Teacher*,

I am writing to request your consent to participate in a study I will be conducting at the Osage Nation language department. I am a graphic designer and a doctoral candidate in the Department of Design, Housing, and Apparel in the College of Design at the University of Minnesota. The study is entitled Exploring the use of stencils as learning aids in the Osage language classroom.

Throughout my coursework and studies, I noticed how little research there was to help designers (graphic designers and interactive designers) like myself, design learning materials and tools for language students of (endangered) Native American languages. With further work, I learned that there are fewer tribes that have a unique orthography or letter system representing their language, which in turn allows for hands-on learning resources to be less accessible. That inspired me to come do research with the Osage Tribe and the Osage language classrooms.

The purpose of this study is to find out whether interactive or hands-on learning tools could help in learning the letterforms of the Osage orthography and to further develop these learning tools to allow for the best learning advantages and outcomes.

Chief Standing Bear and Vann Bighorse, director of the language department, have given approval to conduct this research.

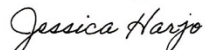
Enclosed with this letter you will find a consent form explaining the aims of the study and what I would be asking you to do. Please read the consent form and if you agree to take part in the study you will need to sign the form and return it to me or Mr. Bighorse.

Parental consent will also need to be sought for any of your students who are under the age of 18 years old. I will need your help with that. Upon receipt of your consent I will work to provide you with the appropriate consent forms to distribute to your classroom(s).

If you have any questions please contact me by telephone (651) 470 2104 or e-mail moor1007@umn.edu. If you feel a meeting would be helpful I would welcome the opportunity to discuss the study further. You may also contact my adviser, Dr. Barbara Martinson, University of Minnesota via email bmartins@umn.edu.

I appreciate your willingness to help me in this research effort and thank you for your consideration.

Yours sincerely,



Jessica R. (Moore) Harjo, MA
Osage, Ojibwe-Missouria, Pawnee, Sac & Fox
Doctoral Candidate
College of Design
University of Minnesota

Teacher Consent Form

Exploring the use of stencils as learning aids in the Osage language classroom

You are invited to be in a research study about how the use of stencils as learning aids could help support the Osage language students in the Osage language classrooms. You were selected as a possible participant because you are an Osage language teacher. We ask that you read this form and ask any questions you may have before agreeing to be in the study.

This study is being conducted by: Jessica R. (Moore) Harjo, Department of Design, Housing, and Apparel, Department of Design, Housing, and Apparel in the College of Design, University of Minnesota, St. Paul, MN 55108.

Background Information

The purpose of this study is to find out whether interactive or hands-on learning tools could help in learning the letterforms of the Osage orthography and to further develop these learning tools to allow for the best learning advantages and outcomes.

Procedures:

If you agree to be in this study, we would ask you to do the following things:

- Under your discretion, integrate the stencils (provided by the researcher) into your classroom activities.
- Allow researcher to sit in to observe your classrooms during a 2-week period (during agreed upon times). Observations will include notes and photos of activities.
- Be interviewed and audio recorded at the end of the study about how the letterforms of the Osage orthography are used in the overall learning process, your thoughts and input on the stencils as well as ideas for new materials. *This will help the researcher with any refinements the stencils may need and to develop new design ideas for future materials that can potentially help with language learning.*

Risks and Benefits of being in the Study

The study has no foreseeable risks.

The benefits to participation are: 1) you could help further knowledge about the design of hands-on learning materials and tools for language students of (endangered) Native American languages and 2) the potential to gain resources for your classrooms.

Compensation:

There is no compensation for your participation, but at the end of the study, you will be able to keep the Osage orthography stencils that are given to you to use in your classroom.

Confidentiality:

The records of this study will be kept private. In any report we might publish, we will not include any information that will make it possible to identify a subject without consent. Research records will be stored securely and only researchers will have access to the records. Study data will be encrypted according to current University policy for protection of confidentiality. Audio recordings will be erased by December 2018.

Voluntary Nature of the Study:

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with the University of Minnesota or the Osage Tribe. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

Contacts and Questions:

The researchers conducting this study are: Jessica R. Harjo under adviser, Dr. Barbara Martinson. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact them:

Jessica R. Harjo, University of Minnesota, (651) 470 2104, e-mail moor1007@umn.edu.
Dr. Barbara Martinson, University of Minnesota, e-mail bmartins@umn.edu.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher(s), **you are encouraged** to contact the Research Subjects' Advocate Line, D528 Mayo, 420 Delaware St. Southeast, Minneapolis, Minnesota 55455; (612) 625-1650.

You will be given a copy of this information to keep for your records.

Statement of Consent:

I _____ have read the above information. I have asked questions and have received answers. I consent to participate in the study.

Signature of participant: _____

Date: _____

Signature of Investigator: _____

Date: _____

Return signed form to researcher or your director or email it to moor1007@umn.edu (please scan in the forms with your signature on).

Informational Letter to Parents/Guardians

Dear Parent/Guardian,

I am writing to request your consent for your child to participate in a study I will be conducting at the Osage Nation language department. I am a graphic designer and a doctoral candidate in the Department of Design, Housing, and Apparel in the College of Design at the University of Minnesota. The study is entitled Exploring the use of stencils as learning aids in the Osage language classroom.

Throughout my coursework and studies, I noticed how little research there was to help designers (graphic designers and interactive designers) like myself, design learning materials and tools for language students of (endangered) Native American languages. With further work, I learned that there are fewer tribes that have a unique orthography or letter system representing their language, which in turn allows for hands-on learning resources to be less accessible. That inspired me to come do research with the Osage Tribe and the Osage language classrooms.

The purpose of this study is to find out whether interactive or hands-on learning tools could help in learning the letterforms of the Osage orthography and to further develop these learning tools to allow for the best learning advantages and outcomes.


Chief Standing Bear and Vann Bighorse, director of the language department, have given approval to conduct this research.

Enclosed with this letter you will find a consent form explaining the aims of the study and what I would be asking your child to do. Please read the consent form and if you agree for your child to take part in the study sign the form and return it to me or your child's Osage language teacher.

If you have any questions please contact me by telephone (651) 470-2104 or e-mail moor1007@umn.edu. You may also contact my adviser Dr. Barbara Martinson, University of Minnesota via e-mail bmartins@umn.edu.

I appreciate your willingness to allow your child to help me in this research effort and thank you for your consideration.

Yours sincerely,



Jessica R. (Moore) Harjo, MA
Osage, Ojibwe-Missouri, Pawnee, Sac & Fox
Doctoral Candidate
College of Design
University of Minnesota

Parental Consent Form (for any students under 18)

Exploring the use of stencils as learning aids in the Osage language classroom

Your child is invited to be in a research study about how the use of stencils as learning aids could help support the Osage language students in the Osage language classrooms. Your child was selected as a possible participant because s/he is an Osage language Student. We ask that you read this form and ask any questions you may have before agreeing to be in the study.

This study is being conducted by: Jessica R. (Moore) Harjo, Department of Design, Housing, and Apparel, Department of Design, Housing, and Apparel in the College of Design, University of Minnesota, St. Paul, MN 55108.

Background Information

The purpose of this study is to find out whether interactive or hands-on learning tools could help in learning the letterforms of the Osage orthography and to further develop these learning tools to allow for the best learning advantages and outcomes.

Procedures:

Researcher will be observing the natural activity of the Osage language classrooms during a 2-week period (during agreed upon times).

Researcher will provide Osage language teacher with Osage orthography stencils to use at their discretion.

If you agree for your child to be in this study, we would ask him/her to do the following things:

- Attend class as they normally do
- Allow researcher to observe them using the Osage orthography stencils and learning the letterforms of the Osage orthography. Observations will include notes and photos of activities.

This observation will help the researcher with any refinements the stencils may need and to develop new design ideas for future materials that can potentially help with language learning.

Risks and Benefits of being in the Study

The study has no foreseeable risks.

The benefits to participation are: 1) your child may enjoy the experience; 2) could help further knowledge about the design of hands-on learning materials and tools for language students of (endangered) Native American languages

Compensation: There is no compensation for your child's participation, but at the end of the study, the classroom that your child is in will be able to keep the Osage orthography stencils that are given to the classroom to use.

Confidentiality:

The records of this study will be kept private. In any report we might publish, we will not include any information that will make it possible to identify a subject without consent. Research records will be stored securely and only researchers will have access to the records. Study data will be encrypted according to current University policy for protection of confidentiality.

Voluntary Nature of the Study:

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with the University of Minnesota or the Osage Tribe. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

Contacts and Questions:

The researchers conducting this study are: Jessica R. Harjo under adviser, Dr. Barbara Martinson. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact them:

Jessica R. Harjo, University of Minnesota, (651) 470 2104, e-mail moor1007@umn.edu.
Dr. Barbara Martinson, University of Minnesota, e-mail bmartins@umn.edu.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher(s), **you are encouraged** to contact the Research Subjects' Advocate Line, D528 Mayo, 420 Delaware St. Southeast, Minneapolis, Minnesota 55455; (612) 625-1650.

You will be given a copy of this information to keep for your records.

Statement of Consent:

I have read the above information. I have asked questions and have received answers. I consent for my child (*insert child's name*) _____ to participate in the study.

Signature of parent or guardian: _____ Date: _____
(*If minors are involved*)

Signature of Investigator: _____ Date: _____
(*If minors are involved*)

Informational Letter to Osage Language Student (18+)

Dear Student,

I am writing to request your consent to participate in a study I will be conducting at the Osage Nation language department. I am a graphic designer and a doctoral candidate in the Department of Design, Housing, and Apparel in the College of Design at the University of Minnesota. The study is entitled Exploring the use of stencils as learning aids in the Osage language classroom.

Throughout my coursework and studies, I noticed how little research there was to help designers (graphic designers and interactive designers) like myself, design learning materials and tools for language students of (endangered) Native American languages. With further work, I learned that there are fewer tribes that have a unique orthography or letter system representing their language, which in turn allows for hands-on learning resources to be less accessible. That inspired me to come do research with the Osage Tribe and the Osage language classrooms.

The purpose of this study is to find out whether interactive or hands-on learning tools could help in learning the letterforms of the Osage orthography and to further develop these learning tools to allow for the best learning advantages and outcomes.

Chief Standing Bear and Vann Bighorse, director of the language department, have given approval to conduct this research.

Enclosed with this letter you will find a consent form explaining the aims of the study and what I would be asking you to do. Please read the consent form and if you agree to take part in the study you will need to sign the form and return it to me or your Osage language teacher.

If you have any questions please contact me by telephone (651) 470-2104 or e-mail moor1007@umn.edu. You may also contact my adviser Dr. Barbara Martinson, University of Minnesota via e-mail bmartins@umn.edu.

I appreciate your willingness to help me in this research effort and thank you for your consideration.

Yours sincerely,



Jessica R. (Moore) Harjo, MA
Osage, Otoe-Missouria, Pawnee, Sac & Fox
Doctoral Candidate
College of Design
University of Minnesota

Student 18+ Consent Form

Exploring the use of stencils as learning aids in the Osage language classroom

You are invited to be in a research study about how the use of stencils as learning aids could help support the Osage language students in the Osage language classrooms. You were selected as a possible participant because you are an Osage language Student. We ask that you read this form and ask any questions you may have before agreeing to be in the study.

This study is being conducted by: Jessica R. (Moore) Harjo, Department of Design, Housing, and Apparel, Department of Design, Housing, and Apparel in the College of Design, University of Minnesota, St. Paul, MN 55108.

Background Information

The purpose of this study is to find out whether interactive or hands-on learning tools could help in learning the letterforms of the Osage orthography and to further develop these learning tools to allow for the best learning advantages and outcomes.

Procedures:

Researcher will be observing the natural activity of the Osage language classrooms during a 2-week period (during agreed upon times). Researcher will provide Osage language teacher with Osage orthography stencils to use at their discretion.

If you agree to be in this study, we would ask you to do the following things:

- Attend class as you normally do.
- Allow researcher to observe you using the Osage orthography stencils and learning the letterforms of the Osage orthography. Observations will include notes and photos of activities.

This observation will help the researcher with any refinements the stencils may need and to develop new design ideas for future materials that can potentially help with language learning.

Risks and Benefits of being in the Study

The study has no foreseeable risks.

The benefits to participation are: 1) you could help further knowledge about the design of hands-on learning materials and tools for language students of (endangered) Native American languages and 2) the potential to gain resources for your classrooms.

Compensation: There is no compensation for your participation, but at the end of the study, your classroom will be able to keep the Osage orthography stencils that are given to the class to use.

Confidentiality:

The records of this study will be kept private. In any report we might publish, we will not include any information that will make it possible to identify a subject without consent. Research records will be stored securely and only researchers will have access to the records. Study data will be encrypted according to current University policy for protection of confidentiality.

Voluntary Nature of the Study:

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with the University of Minnesota or the Osage Tribe. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

Contacts and Questions:

The researchers conducting this study are: Jessica R. Harjo under adviser, Dr. Barbara Martinson. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact them:

Jessica R. Harjo, University of Minnesota, (651) 470 2104, e-mail moor1007@umn.edu.
Dr. Barbara Martinson, University of Minnesota, e-mail bmartins@umn.edu.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher(s), **you are encouraged** to contact the Research Subjects' Advocate Line, D528 Mayo, 420 Delaware St. Southeast, Minneapolis, Minnesota 55455; (612) 625-1650.

You will be given a copy of this information to keep for your records.

Statement of Consent:

I _____ have read the above information. I have asked questions and have received answers. I consent to participate in the study.

Signature of participant: _____

Date: _____

Signature of Investigator: _____

Date: _____

Return signed form to researcher or your director or email it to moor1007@umn.edu (please scan in the forms with your signature on).

Appendix C

Consent Form for Interviews

Title: Exploring the use of stencils as learning aids in the Osage language classroom.

Consent Form for Interviews

Thank you for participating in this research study. Please read over the following conditions, initial the boxes below to confirm that you agree with each statement, sign and date the form:

*Please
Initial box:*

I confirm that I have read and understood the Informational Letter for Teachers and Consent form and have had the opportunity to ask questions.

☐

I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason and without there being any negative consequences. In addition, should I not wish to answer any particular question or questions, I am free to decline.

☐

I understand that my responses will be kept strictly confidential. I understand that my name will not be linked with the research materials, and will not be identified or identifiable in the report or reports that result from the research.

☐

I agree for this interview to be tape-recorded. I understand that the audio recording made of this interview will be used only for analysis and that extracts from the interview, from which I would not be personally identified, may be used in any conference presentation, report or journal article developed as a result of the research. I understand that no other use will be made of the recording without my written permission, and that no one outside the research team will be allowed access to the original recording.

☐

I agree that my anonymised data will be kept for future research purposes such as publications related to this study after the completion of the study.

☐

I agree to take part in this interview.

☐

Name of participant

Date

Signature

Investigator

Date

Signature

Appendix D

Semi-structured Interview Questions

The first set of questions are about your teaching style and the lessons or activities in your classroom(s).

1. Describe your teaching style. (Or describe a successful experience you've had while teaching.)
2. What activities do you find more successful in teaching the Osage language?
 - a. Less successful?
3. You were given a set of Osage orthography stencils for this study. Please describe the activity or exercise that you chose for the use the stencils.
 - a. How were the stencils most effective in this activity?
 - b. Least effective?
 - c. What, if anything, would you change about the stencils to enhance this activity?
4. In general, can you see yourself using these stencils for other activities?
 - a. If so, what other activities come to mind?
 - i. For _____ activity, would the stencils need to be modified in any way?
5. Having worked with the stencils, what other materials or learning tools do you think could help teach the Osage Orthography?
 - a. Are there any learning tools that you wish you had in your classroom?
 - i. What are they and why?

The second set of questions are about teaching the Osage Orthography.

6. What are your views of using the orthography to teach the Osage language?
7. What are the students' attitudes about learning the orthography?
8. What activities are they more interested in?
 - a. Least interested in?
 - b. Why do you think _____ activity is more/less favored?
9. Describe to me the reason you teach the language?
 - a. Important> Why or why not?